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Extra Credit/Make-up Work Packet **ALGEBRA 2**

USE YOUR OWN PIECE OF PAPER TO SOLVE

1.	Add. $8\sqrt{3}+\sqrt{48}$	2.	Add. $\sqrt{28}+2\sqrt{7}$
3.	Graph $f(x) = -x^2 + 6x - 4$	4.	Graph $f(x) = x^2 + 8x - 10$
5.	Add. Write your answer in standard form. $(3h^7 + h^4) + (-h^7 + 2h^4 - 6)$	6.	Add. Write your answer in standard form. $(5g^5 + 3g^2 - 2) + (g^5 + 6g^2 + 1)$
7.	Find the product $(7x - 2)(x^4 + 2x^2 + 1)$	8.	Find the product $(3x + 6)(2x^3 - 5x^2 + 4)$
9.	Solve the equation $x^2 = 5 + 4x$	10.	Solve the equation $x^2 = -10 + 7x$
11.	Solve the system of equations. $\begin{cases} -2x + 7y = 14 \\ -5x - 2y = 15 \end{cases}$	12.	Solve the system of equations. $\begin{cases} 3x - 10y = 30 \\ -2x + 11y = 11 \end{cases}$
13.	Find the product $3ab^3(-5a^2b + a^4b^3)$.	14.	Find the product. $5m^3n^2(6mn^4 - m^2n^5)$
15.	$\lvert 3 + 2x \rvert < 13$	16.	$\lvert 6 - 3x \rvert > 12$
17.	Graph the inequality $y < \frac{1}{2}x + 5$.	18.	Graph the inequality. $y > -\frac{1}{3}x + 2$
19.	Solve the system $\begin{cases} 4x + y = 8 \\ y = 2x + 2 \end{cases}$	20.	Solve the system $\begin{cases} x - 3y = -3 \\ x = 4y - 5 \end{cases}$
21.	Solve the system $\begin{cases} 2x - 4y = 8 \\ -2x - y = -18 \end{cases}$	22.	Solve the system $\begin{cases} 5x - 3y = -1 \\ x + 3y = 7 \end{cases}$
23.	Graph $y = x^2 + 2x - 8$.	24.	Graph $y = x^2 - 3x + 2$.
25.	Determine the maximum or minimum value for $f(x) = x^2 + 10x - 3$.	26.	Determine the maximum or minimum value for $f(x) = -x^2 + 6x - 2$
27.	Find the roots of the equation $14x - 60 = -2x^2$ by factoring.	28.	Find the roots of the equation $-15x + 90 = -5x^2$.
29.	Solve the equation $x^2 - 6x - 22 = 41$.	30.	Solve the equation $x^2 - 8x - 56 = 32$.
31.	Express $5\sqrt{-117}$ in terms of i.	32.	Express $2\sqrt{-176}$ in terms of i.
33.	Subtract. Write the result in the form $a + bi$. $(8 - 4i) - (2 + 3i)$	34.	Subtract. Write the result in the form $a + bi$. $(2 + 7i) - (3 - 6i)$
35.	Multiply $4i(6 - 9i)$.	36.	Multiply $5i(9-3i)$.
37.	A toy rocket is launched from the ground level with an initial vertical velocity 32 ft/s. The position of the rocket can be tracked using the following equation $f(t) = -16t^2 + 32t$, where t is the time in seconds. After how many seconds will the rocket hit the ground?	38.	A toy rocket is launched from the ground level with an initial vertical velocity of 48 ft/s. The position of the rocket can be tracked using the following equation $f(t) = -16t^2 + 48t$, where t is the time in seconds. After how many seconds will the rocket hit the ground?
39.	Identify the vertex for the graph of $f(x) = 3x^2 + 12x + 4$.	40.	Identify the vertex for the graph of $f(x) = 4x^2 + 20x + 7$.
41.	Use inverse operations to write the inverse of $f(x) = x + \frac{2}{5}$	42.	Use inverse operations to write the inverse of $f(x) = x - \frac{3}{4}$
43.	Subtract. Write your answer in standard form. $(6x^2 + 7x - 12) - (4x^2 - 22)$	44.	Subtract. Write your answer in standard form. $(4x^2 - 2x + 9) - (8x - 10)$
45.	Simplify the expression $(6)^0(5)^{-3}$.	46.	Simplify the expression $(7)^{-2}(4)^0(5)^1$.
47.	Add. $6\sqrt{5} + \sqrt{45}$	48.	Simplify the expression $(3)^{-2}\ (7)^0\ (5)^3$.
49.	Simplify. $\frac{7p^3q^{-2}r^0}{6p^9q^5r^3} \cdot \frac{12r^{-5}p^2}{35pq^{-3}}$	50.	Simplify. $\frac{km^6(m^2n^{-4})^2n^5}{k^{-1}m^0n^{-6}}$
51.	Solve. $2 + \sqrt{5x + 10} = 7$	52.	Simplify. $\frac{7d^{-5}e^3f^4}{(d^4ef^{-2})^3}$

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53.	Solve the system of equations. $\begin{cases} -3x + 4y = 12 \\ 7x + 3y = 21 \end{cases}$	54.	Solve the system. $\begin{cases} 5x + 3y = 16 \\ -x - 3y = -8 \end{cases}$
55.	Determine the solution to the following inequality. $\lvert 5 - 2x \rvert \geq 11$	56.	Determine the solution(s) for the system. $\begin{cases} -3x + 5y = 2 \\ -15y + 9x = 12 \end{cases}$
57.	Graph the inequality. $y > -\frac{3}{4}x + 1$	58.	Solve the system. $\begin{cases} y = -3x + 1 \\ 5x + y = 7 \end{cases}$
59.	Solve the system of equations. $\begin{cases} 6x + 2y = 38 \\ -3x + 5y = -31 \end{cases}$	60.	Subtract. Write the result in the form $a + bi$. $(6 + 13i) - (9 - 11i)$
61.	Graph $f(x) = x^2 - 8x + 2$	62.	Solve the equation $x^2 = -12 - 8x$
63.	Graph $y = -x^2 + 12x - 11$	64.	Multiply. Write the result in the form $a + bi$. $8i(3 - 6i)$
65.	Identify the vertex. $f(x) = -x^2 + 16x - 2$	66.	Find the roots of the equation $3x^2 = -3x + 168$ by factoring.
67.	Express $-3\sqrt{-136}$ in terms of i.	68.	Identify the vertex for the graph of $f(x) = -5x^2 + 20x - 2$
69.	Solve the equation $x^2 + 8x - 30 = 17$	70.	Factor. $5x^2 + 23x + 12$
71.	A toy rocket is launched from the ground level with an initial vertical velocity of 80 ft/s. The position of the rocket can be tracked using the following equation $f(t) = -16t^2 + 80t$, where t is the time in seconds. After how many seconds will the rocket hit the ground?	72.	How many solutions will the equation have? Will they be real or imaginary? $-x^2 = 2x - 20$
73.	Graph. $y = -2x^2 + 5x - 2$	74.	Determine the roots of the function. $f(x) = x^2 + 10x + 14$
75.	Graph $g(x)$. $g(x) = (2x + 1)^2 - 4$	76.	Find the zeros. $f(x) = x^2 + 13x + 7$
77.	Find the *x*-intercepts of the function. $f(x) = x^2 + 3x - 18$	78.	Simplify. i^{3243}
79.	Graph. $f(x) = -4x^2 + 8x + 32$	80.	Determine the equation of the parabola with its focus at (0, 2) and directrix at y = 7.
81.	Determine the equation of the parabola with its focus at (4, -3) and directrix at x = 1.	82.	Identify the type of conic section, and the details. $\frac{(x+2)^2}{8} + \frac{(y-12)^2}{3} = 1$
83.	Identify the type of conic section, and the details. $\frac{(x-7)^2}{19} - \frac{(y+2)^2}{1} = 1$	84.	Write an equation in standard form for an ellipse with center (5, 2), vertex (5, 8), and focus (5, 6).
85.	Write an equation in standard form for an ellipse with center (1, -3), vertex (6, -3), and focus (4, -3).	86.	Write the equation of the circle with a radius of 7 and a center at (3, -14).
87.	Write the equation of the circle with a radius of 2 and a center at (-5, 4).	88.	Graph. $y = \frac{2}{3}x + 3$
89.	Graph. $y - 4 = -2(x + 2)$	90.	Graph. $y = -\frac{3}{2}x + 5$
91.	Graph. $y + 4 = 5(x)$	92.	Determine the intercepts. $y = 5x + 3$
93.	Determine the intercepts. $y + 6 = 4(x - 1)$	94.	$\lvert 4x + 2 \rvert = 14$
95.	$\lvert 5x - 3 \rvert = 7$	96.	$\lvert 7x + 14 \rvert = 21$
97.	$\lvert x - 4 \rvert < 3$	98.	$\lvert 3x + 9 \rvert \geq 27$
99.	$\lvert 5x + 2 \rvert < 13$	100.	Graph. $y = \lvert x - 5 \rvert - 1$

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101.	Graph. $y = -\|x + 2\| - 5$	102.	Determine the inverse. $y = -3x + 6$
103.	Determine the inverse. $y = \frac{1}{5}x + 1$	104.	Graph the inverse. $y = -5x + 10$
105.	Graph. $y + 5 = -\frac{1}{3}(x + 9)$	106.	Graph. $y \geq 4x - 2$
107.	Graph. $x = 3$	108.	Graph. $f(x) = -\frac{1}{4}\|x + 8\| + 2$
109.	Evaluate. $\|3x + 7\| = 8$	110.	Evaluate. $\|5x - 20\| > 15$
111.	$g(x) = 3x^2 - 2x + 1$ $g(-1) = ?$	112.	Determine the inverse. $y = \frac{2}{3}x + 6$
113.	Determine the inverse. $y + 3 = -4(x + 1)$	114.	Is the point a solution to the system?
115.	Is the point a solution to the system?	116.	$(-2, 4)$ $\begin{cases} 5x + 3y = 2 \\ 2x - 3y = -8 \end{cases}$
117.	$(0, -5, 3)$ $\begin{cases} 4x - y + 2z = 11 \\ 2x + 2y - z = -13 \\ 7x - 8y + 9z = 67 \end{cases}$	118.	Determine the solutions. $\begin{cases} 7x - 2y = 19 \\ x + y = 4 \end{cases}$
119.	Determine the solutions. $\begin{cases} 9x + 6y = 15 \\ 12x + 8y = 10 \end{cases}$	120.	Determine the solutions. $\begin{cases} -x + y = 0 \\ x = 3y - 10 \end{cases}$
121.	Determine the solutions. $\begin{cases} y + 6 = 2(x + 4) \\ 4x - 2y = -4 \end{cases}$	122.	Simplify. $\sqrt{450}$
123.	Simplify. $\sqrt{72}$	124.	$h(x) = 5x^2 + 3x - 7$ $h(-3) = ?$
125.	Graph. $y + 3 = 4(x - 2)$	126.	Graph. $y = \frac{3}{5}x - 7$
127.	Graph. $y - 5 = -2(x + 3)$	128.	Graph. $y = -\frac{4}{5}x - 1$
129.	Graph. $y + 6 = 3(x - 8)$	130.	Graph. $y = \frac{6}{7}x - 9$
131.	Graph. $y = 5$	132.	Graph. $y - 7 \geq -\frac{5}{2}(x + 1)$
133.	Graph. $y + 8 > \frac{2}{7}(x - 4)$	134.	Graph. $y < 3x + 5$
135.	Graph. $y + 1 \leq 2(x)$	136.	Determine the intercepts. $y = 2x - 9$
137.	Determine the intercepts. $y + 3 = 6(x + 2)$	138.	Determine the intercepts. $y = 5x + 15$
139.	Evaluate. $\|x + 2\| = 17$	140.	Evaluate. $\|5x - 8\| = 2$
141.	Evaluate. $\|2x + 6\| = 14$	142.	Evaluate. $\|9x - 18\| = 27$
143.	Evaluate. $\|8x + 4\| = 16$	144.	Evaluate. $\|5x - 15\| = 10$

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145.	Evaluate. $\|5x-2\|=8$	146.	Evaluate. $\|6x+12\|=6$
147.	Evaluate. $\|4x-2\|=14$	148.	Evaluate. $\|5x+6\|=9$
149.	Evaluate. $\|x-5\|\geq 7$	150.	Evaluate. $\|3x+9\|<12$
151.	Evaluate. $\|4x+8\|\geq 6$	152.	Evaluate. $\|x+3\|>7$
153.	Evaluate. $\|2x+7\|\leq 15$	154.	Evaluate. $\|2x+3\|>4$
155.	Evaluate. $\|2x+7\|<5$	156.	Evaluate. $\|3x-18\|<24$
157.	Graph. $y=\|x-3\|+2$	158.	Graph. $y=-\|x+6\|-7$
159.	Graph. $y=4\|x-1\|-8$	160.	Graph. $f(x)=-3\|x+2\|+5$
161.	Graph. $f(x)=-\frac{3}{2}\|x+1\|-6$	162.	Write the inverse equation. $y=\frac{1}{3}x+7$
163.	Write the inverse equation. $y=2x-4$	164.	Determine the inverse equation. $y=5x+20$
165.	Write the inverse equation. $y=6x+18$	166.	Determine the inverse. $y-2=5(x-3)$
167.	Determine the inverse. $y=\frac{3}{4}x+12$	168.	Graph the inverse. $y=2x+8$
169.	Determine the solution to the system of equations. $\begin{cases}4x+8y=18\\6x+12y=27\end{cases}$	170.	Determine the solution to the system of equations. $\begin{cases}2y=6x+38\\y-3=2(x+6)\end{cases}$
171.	Determine the solution to the system of equations. $\begin{cases}x-3y=-7\\2x=4y-8\end{cases}$	172.	Determine the solution to the system of equations. $\begin{cases}5x+6y=21\\-10x-12y=42\end{cases}$
173.	Determine the solution to the system of equations. $\begin{cases}x+y=13\\6x+4y=68\end{cases}$	174.	Determine the solution to the system of equations. $\begin{cases}15x+10y=20\\-3x+2y=-4\end{cases}$
175.	Solve the system. $\begin{cases}3x+4y=17\\-4y+5x=-25\end{cases}$	176.	Solve the system. $\begin{cases}8x+2y=20\\2x+3y=30\end{cases}$
177.	Solve the system. $\begin{cases}2x=4y-2\\x-2y=1\end{cases}$	178.	Solve the system. $\begin{cases}6x+6y=60\\x+y=10\end{cases}$
179.	Solve the system. $\begin{cases}-9x+8y=-48\\5x-4y=24\end{cases}$	180.	Solve. $\begin{cases}-x+y=-7\\y=2x-11\end{cases}$
181.	Solve. $\begin{cases}-3x+y=17\\y+2=3(x-5)\end{cases}$	182.	On Monday, Henry sold 8 child tickets and 32 adult tickets to a movie for $264. On Tuesday, he sold 10 child tickets and 30 adult tickets for $260. What is the price of a child ticket?
183.	An event hall has round tables and square tables. For an event, they used 12 round tables and 3 square tables, which seated a total of 144 people. At another event, they used 6 round tables and 18 square tables, which seated 204 tables. How many people can sit at a round table?	184.	Fred and Ben are selling toys. Fred sold 8 yo-yos and 9 slinkies for $42. Ben sold 6 yo-yos and 13 slinkies for $44. How much does a yo-yo cost?

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185.	Is the given point a solution to the system of equations? $(3,1)$ $\begin{cases}2x+6y=12\\5x-4y=14\end{cases}$	186.	Is the given point a solution to the system of equations? $(1,-3,2)$ $\begin{cases}2x+3y-z=-9\\3x+y+z=2\\5x+5y-2z=-14\end{cases}$
187.	Maximize $P=2x-3y$ for the points $(7,1),(0,4),(6,0)$ and $(9,5)$.	188.	Simplify. $\sqrt{-234}$
189.	Determine the intercepts. $y=4x+16$	190.	Graph. $y+6=\frac{1}{3}(x-2)$
191.	Graph. $y<\frac{2}{5}x-3$	192.	Graph. $f(x)=3\lvert x-5\rvert-6$
193.	Solve. $\lvert 3x+12\rvert<6$	194.	Write the inverse equation. $y=3x+18$
195.	Solve. $\begin{cases}7x+5y=26\\2x-y=5\end{cases}$	196.	Sean bought 3 books and 5 DVDs for a total of $34. Jenny bought 6 books and 2 DVDs for $28. How much do the books cost?
197.	Simplify. $(5+7i)(8-3i)$	198.	Simplify. i^{403}
199.	$f(x)=2(x-1)^2-4$ Determine the vertex.	200.	$f(x)=2(x-1)^2-4$ Determine the solutions.
201.	$f(x)=2(x-1)^2-4$ Graph the quadratic.	202.	$g(x)=3x^2+18x+24$ Determine the vertex.
203.	$g(x)=3x^2+18x+24$ Write the quadratic in vertex form.	204.	$g(x)=3x^2+18x+24$ Determine the solution(s).
205.	$g(x)=3x^2+18x+24$	206.	Graph the quadratic.
207.	Determine the equation of the parabola with its focus at (0, 2) and directrix at y = 7. Use the distance formula.	208.	Determine the equation of the parabola with its focus at (4, -3) and directrix at x = 1. Use the distance formula.
209.	Identify the type of conic section. $\frac{(x+2)^2}{8}+\frac{(y-12)^2}{3}=1$	210.	Identify the type of conic section. $\frac{(x-7)^2}{19}-\frac{(y+2)^2}{1}=1$
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