**(Part 1) Multiple Choice**: Identify the choice that best completes the statement or answers the question.

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| 1. Determine the *x*-intercept for

$$f\left(x\right)=-3x^{2}+3x+18$$A. $\left(2, 0\right) and (-3, 0)$B. $\left(-2, 0\right) and (3, 0)$C. $\left(0, -2\right) and (0, 3)$D. $\left(-2, 0\right) and (-3, 0)$ | 1. Determine the axis of symmetry if the *x*-intercepts of the parabola are $(6, 0)$ and$ (20, 0)$

A. $x=13$B. $x=6$C. $x=7$D. $x=14$ | 1. Which function opens upward?

A. $f\left(x\right)=(x+3)(-4x-2)$B. $f\left(x\right)=-(x+4)(x+5)$C. $f\left(x\right)=-2\left(x+7\right)^{2}+4$D. $f\left(x\right)=x^{2}-3x-8$ | 1. Which is the absolute maximum of the function $f\left(x\right)=x^{2}-14x$

A. $(-7, 49)$B. $(7, -49)$C. $(0, 0)$D. $(-49, 7)$ |
| 1. Which of these functions has a *y*-intercept of $(0, 4)$?

A. $f\left(x\right)=5x(x-4)$B. $f\left(x\right)=4x^{2}+2x-3$C. $f\left(x\right)=-x^{2}+3x+4$D. $f\left(x\right)=4(x+2)(x-3)$ | 1. What is the range of the function represented by the graph?

A. $y\geq -4$B. $y\leq -3$C. $y\geq 1$D. $y\geq -3$ | 1. How does this equation compare to the graph of $g\left(x\right)=x^{2}?$

$$h\left(x\right)=\left(x+5\right)^{2}-3$$A. It opens downward, and it is translated 5 units to the left and 3 units down.B. It opens downward, and it is translated 5 units to the right and 3 units down.C. It opens up, and it is translated 5 units to the left and 3 units down.D. It opens up, and it is translated 5 units to the right and 3 units down. | 1. Determine the product.

$$(2x+7)(3x-5)$$A. $6x^{2}+31x+35$B. $6x^{2}+11x-35$C. $6x^{2}+21x-35$D. $6x^{2}-35$ |
| 1. Simplify.

$$\left(4x^{6}-5x\right)-(3x^{2}-5x+3)$$A. $4x^{6}-8x^{2}+5x-3$B. $x^{4}-10x+3$C. $4x^{4}+3x^{2}+3$D. $4x^{6}-3x^{2}-3$ | 1. Which correctly factors the polynomial?

$$12x^{2}-5x-2$$A. $(x+8)(x-3)$B. $(x-8)(x+3)$C. $(4x+1)(3x-2)$D. $(4x-1)(3x+2)$ | 1. A park is in the shape of a square. The area of the park is 249 square meters. The exact length of a side of the park is between which two lengths?

A. 11 meters and 12 metersB. 13 meters and 14 metersC. 15 meters and 16 metersD. 17 meters and 18 meters | 1. Which is equivalent to the radical expression?

$$\sqrt{135}$$A. $3\sqrt{15}$B. $5\sqrt{15}$C. $3\sqrt{11}$D. $5\sqrt{11}$ |
| 1. Which correctly completes the square to solve the polynomial?

$$x^{2}-12x=32$$A. $x^{2}-12x=32$B. $x^{2}-12x=32$C. $x^{2}-12x=32$D. $x^{2}-12x=32$ | 1. Which polynomial does the graph represent?

A. $y=(x-5)(x+1)$B. $y=(x-5)(x-1)$C. $y=(x+5)(x+1)$D. $y=(x+5)(x-1)$ | 1. What are the zeros of the quadratic function?

$$f\left(x\right)=3x^{2}+9x-12$$A. $x=1 or x=4$B. $x=-1 or x=4$C. $x=-1 or x=-4$D. $x=1 or x=-4$ | 1. What are the solutions to this system of equations?

$$\left\{\begin{array}{c}y=3x+13\\y=x^{2}+3\end{array}\right.$$A. $\left(2, 7\right);(-5, 28)$B. $\left(-2, 7\right);(5, 28)$C. $\left(-2, -7\right);(5, 28)$D. $\left(2, 7\right);(-5, -28)$ |
| 1. What are the interval solutions to the quadratic inequality $-x^{2}-4x+12\leq 0$?

A. $(-6, 2)$B. $[-6, 2]$C. $\left(-\infty , -6\right) or (2, \infty )$D. $\left(-\infty , -6\right] or [2, \infty )$ | 1. How many real solutions does the quadratic function $f\left(x\right)=5x^{2}+1$ have?

A. 0B. 1C. 2D. Infinite | 1. What are the solutions to the system of equations shown?

A. $\left(4, 2\right);(8, 2)$B. $\left(4, 1\right);(8, 1)$C. $\left(6, -3\right);(6, 5)$D. $\left(1, 4\right);(1, 8)$ | 1. The point $(0, -9)$ identifies what feature of the graph below?

A. VertexB. Y-interceptC. Axis of SymmetryD. X-intercept |
| 1. What are the zeros of the equation function $f\left(x\right)=x^{2}-5x+7$?

A. $x=\frac{5\pm i\sqrt{3}}{2}$B. $x=-\frac{5\pm i\sqrt{3}}{2}$C. $x=\frac{5\pm 3i}{2}$D. $x=-\frac{5\pm 3i}{2}$ | 1. What is the inverse of $f\left(x\right)=4x-5$?

A. $f^{-1}\left(x\right)=\frac{1}{4}x+\frac{1}{5}$B. $f^{-1}\left(x\right)=-\frac{1}{4}x-\frac{1}{5}$C. $f^{-1}\left(x\right)=\frac{1}{4}x+\frac{5}{4}$D. $f^{-1}\left(x\right)=-\frac{1}{4}x-\frac{5}{4}$ | 1. Which of the following is NOT a one-to-one function?

A. $f\left(x\right)=8x$B. $f\left(x\right)=8$C. $f\left(x\right)=8x-7$D. $f\left(x\right)=\frac{1}{8}x-\frac{7}{8}$ | 1. What is the inverse of the point $(9, -6)$?

A. $(9, -6)$B. $(-9, 6)$C. $(-6, 9)$D. $(6, -9)$ |

 **(PART 2) Constructed Response:** Show all work necessary to determining the solution.

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| --- | --- |
| 1. The graph represents the function

$f\left(x\right)=2x^{2}-20x+42$. Identify each of the properties listed.Domain: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Range: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Zeros: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Interval of increase: \_\_\_\_\_\_\_\_\_\_\_\_\_\_Interval of decrease: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 1. Show by drawing an area model or multiplication table how to find the product of $-2x+11$ and $5x+9$. Also, find the product of $-2x+11$ and $5x+9$.
 |
| 1. Sean was determining the roots for the quadratic equation $x^{2}+8x+3=-4$. His work is shown.

$$x^{2}+8x+3=-4$$$$x^{2}+8x+7=0$$$$a=1, b=8, c=7$$$$x=\frac{-8\pm \sqrt{8^{2}-4\left(1\right)\left(7\right)}}{2(1)}$$$$x=\frac{-8\pm \sqrt{64+28}}{2}$$$$x=\frac{-8\pm \sqrt{92}}{2}=\frac{-8\pm 2\sqrt{13}}{2}=-4+\sqrt{13} or-4-\sqrt{13}$$The roots are $-4+\sqrt{13}$ or $-4-\sqrt{13}$a. What did Sean do incorrectly when determining the roots?b. Determine the roots for the given quadratic equation. | 1. Name each of the following for the quadratic function $h\left(x\right)=-x^{2}-6x+16$.

 Zeros \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ y-intercept \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Vertex \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

Answers

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1. B
 | 1. A
 | 1. D
 | 1. B
 | 1. C
 | 1. A
 | 1. C
 | 1. B
 |
| 1. D
 | 1. C
 | 1. C
 | 1. A
 | 1. C
 | 1. D
 | 1. D
 | 1. B
 |
| 1. D
 | 1. A
 | 1. B
 | 1. B
 | 1. A
 | 1. C
 | 1. B
 | 1. C
 |
| 1. Domain: $(-\infty , \infty )$

Range: $[-8,\infty )$Zeros: $x=3 x=7$Increase: $(5, \infty )$Decrease: $(-\infty ,5)$ | 1. Y

|  |  |  |
| --- | --- | --- |
|  | -2x | +11 |
| 5x | -10x2 | +55x |
| +9 | -18x | +99 |

 -10x2 + 37x + 99 |
| 1. a. He multiplied -4(1)(7) to get +28. It should have been

-28.b. (-7, 0) (-1, 0) | 1. Zeros: (-8, 0) (2, 0)

Y-int: (0, 16)Vertex: (-3, 25) |

Integrated Math II Final Exam Study Guide (Semester 1) Answers

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1. B
 | 1. A
 | 1. D
 | 1. B
 | 1. C
 | 1. A
 | 1. C
 | 1. B
 |
| 1. D
 | 1. C
 | 1. C
 | 1. A
 | 1. C
 | 1. D
 | 1. D
 | 1. B
 |
| 1. D
 | 1. A
 | 1. B
 | 1. B
 | 1. A
 | 1. C
 | 1. B
 | 1. C
 |
| 1. Domain: $(-\infty , \infty )$

Range: $[-8,\infty )$Zeros: $x=3 x=7$Increase: $(5, \infty )$Decrease: $(-\infty ,5)$ | 1. Y

|  |  |  |
| --- | --- | --- |
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Integrated Math II Final Exam Study Guide (Semester 1) Answers

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1. B
 | 1. A
 | 1. D
 | 1. B
 | 1. C
 | 1. A
 | 1. C
 | 1. B
 |
| 1. D
 | 1. C
 | 1. C
 | 1. A
 | 1. C
 | 1. D
 | 1. D
 | 1. B
 |
| 1. D
 | 1. A
 | 1. B
 | 1. B
 | 1. A
 | 1. C
 | 1. B
 | 1. C
 |
| 1. Domain: $(-\infty , \infty )$

Range: $[-8,\infty )$Zeros: $x=3 x=7$Increase: $(5, \infty )$Decrease: $(-\infty ,5)$ | 1. Y

|  |  |  |
| --- | --- | --- |
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 -10x2 + 37x + 99 |
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Integrated Math II Final Exam Study Guide (Semester 1) Answers

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1. B
 | 1. A
 | 1. D
 | 1. B
 | 1. C
 | 1. A
 | 1. C
 | 1. B
 |
| 1. D
 | 1. C
 | 1. C
 | 1. A
 | 1. C
 | 1. D
 | 1. D
 | 1. B
 |
| 1. D
 | 1. A
 | 1. B
 | 1. B
 | 1. A
 | 1. C
 | 1. B
 | 1. C
 |
| 1. Domain: $(-\infty , \infty )$

Range: $[-8,\infty )$Zeros: $x=3 x=7$Increase: $(5, \infty )$Decrease: $(-\infty ,5)$ | 1. Y

|  |  |  |
| --- | --- | --- |
|  | -2x | +11 |
| 5x | -10x2 | +55x |
| +9 | -18x | +99 |

 -10x2 + 37x + 99 |
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