$\qquad$
Factoring to Determine Roots
Factor each quadratic, and identify the roots. If the problem cannot be factored, write "Not Factorable."


| 7. $n(x)=2 x^{2}-20 x+50$ | 8. $p(x)=4 x^{2}+3 x-2$ | 9. $r(x)=-x^{2}-2 x-1$ |
| :---: | :---: | :---: |
| Factored Form: | Factored Form: | Factored Form: |
| Roots: | Roots: | Roots: |
| Roots as points: | Roots as points: | Roots as points: |
| 10. $t(x)=2 x^{2}+8 x-24$ | 11. $v(x)=-5 x^{2}+8 x$ | 12. $w(x)=x^{2}-6 x+7$ |
| Factored Form: | Factored Form: | Factored Form: |
| Roots: | Roots: | Roots: |
| Roots as points: | Roots as points: | Roots as points: |
| 13. $f(x)=2 x^{2}-11 x-21$ | 14. $g(x)=x^{2}-6 x-5$ | 15. $h(x)=-3 x^{2}+6 x-3$ |
| Factored Form: | Factored Form: | Factored Form: |
| Roots: | Roots: | Roots: |
| Roots as points: | Roots as points: | Roots as points: |

Factoring to Determine Roots Answers

| 1. Factored Form: $f(x)=2(x+1)(x-7)$ | 2. Factored Form: $g(x)=(x+8)(x-1)$ | 3. Factored Form: $h(x)=4\left(x+\frac{3}{2}\right)\left(x-\frac{3}{2}\right)$ |
| :---: | :---: | :---: |
| Roots: $x=-1$ or $x=7$ | Roots: $x=-8$ or $x=1$ | Roots: $x=-\frac{3}{2}$ or $x=\frac{3}{2}$ |
| Roots as points: $(-1,0)$ or $(7,0)$ | Roots as points: $(-8,0)(1,0)$ | Roots as points: $\left(-\frac{3}{2}, 0\right)\left(\frac{3}{2}, 0\right)$ |
| 4. Factored Form: Not Factorable | 5. Factored Form: $k(x)=(x+3)(x+3)$ | 6. Factored Form: $m(x)=-(x+5)(x-4)$ |
|  | Roots: $x=-3$ | Roots: $x=-5$ or $x=4$ |
|  | Roots as points: $(-3,0)$ | Roots as points: $(-5,0)(4,0)$ |
| 7. Factored Form: $n(x)=2(x-5)(x-5)$ | 8. Factored Form: <br> Not Factorable | 9. Factored Form: $r(x)=-(x+1)(x+1)$ |
| Roots: $x=5$ |  | Roots: $x=-1$ |
| Roots as points: $(5,0)$ |  | Roots as points: $(-1,0)$ |
| 10. Factored Form: $t(x)=2(x+6)(x-2)$ | 11. Factored Form: $v(x)=-5 x\left(x-\frac{8}{5}\right)$ | 12. Factored Form: Not Factorable |
| Roots: $x=-6$ or $x=2$ | Roots: $x=0$ or $x=\frac{8}{5}$ |  |
| Roots as points: $(-6,0)(2,0)$ | Roots as points: $(0,0)\left(\frac{8}{5}, 0\right)$ |  |
| 13. Factored Form: $f(x)=2\left(x+\frac{3}{2}\right)(x-7)$ | 14. Factored Form: Not Factorable | 15. Factored Form: $h(x)=-3(x-1)(x-1)$ |
| Roots: $x=-\frac{3}{2}$ or $x=7$ |  | Roots: $x=1$ |
| Roots as points: $\left(\frac{3}{2}, 0\right)(7,0)$ |  | Roots as points: $(1,0)$ |

## Factoring to Determine Roots Answers

| 1. Factored Form: $f(x)=2(x+1)(x-7)$ | 2. Factored Form: $g(x)=(x+8)(x-1)$ | 3. Factored Form: $h(x)=4\left(x+\frac{3}{2}\right)\left(x-\frac{3}{2}\right)$ |
| :---: | :---: | :---: |
| Roots: $x=-1$ or $x=7$ | Roots: $x=-8$ or $x=1$ | Roots: $x=-\frac{3}{2}$ or $x=\frac{3}{2}$ |
| Roots as points: $(-1,0)$ or $(7,0)$ | Roots as points: $(-8,0)(1,0)$ | Roots as points: $\left(-\frac{3}{2}, 0\right)\left(\frac{3}{2}, 0\right)$ |
| 4. Factored Form: <br> Not Factorable | 5. Factored Form: $k(x)=(x+3)(x+3)$ | 6. Factored Form: $m(x)=-(x+5)(x-4)$ |
|  | Roots: $x=-3$ | Roots: $x=-5$ or $x=4$ |
|  | Roots as points: $(-3,0)$ | Roots as points: $(-5,0)(4,0)$ |
| 7. Factored Form: $n(x)=2(x-5)(x-5)$ | 8. Factored Form: Not Factorable | 9. Factored Form: $r(x)=-(x+1)(x+1)$ |
| Roots: $x=5$ |  | Roots: $x=-1$ |
| Roots as points: $(5,0)$ |  | Roots as points: $(-1,0)$ |
| 10. Factored Form: $t(x)=2(x+6)(x-2)$ | 11. Factored Form: $v(x)=-5 x\left(x-\frac{8}{5}\right)$ | 12. Factored Form: Not Factorable |
| Roots: $x=-6$ or $x=2$ | Roots: $x=0$ or $x=\frac{8}{5}$ |  |
| Roots as points: $(-6,0)(2,0)$ | Roots as points: $(0,0)\left(\frac{8}{5}, 0\right)$ |  |
| 13. Factored Form: $f(x)=2\left(x+\frac{3}{2}\right)(x-7)$ | 14. Factored Form: Not Factorable | 15. Factored Form: $h(x)=-3(x-1)(x-1)$ |
| Roots: $x=-\frac{3}{2}$ or $x=7$ |  | Roots: $x=1$ |
| Roots as points: $\left(\frac{3}{2}, 0\right)(7,0)$ |  | Roots as points: $(1,0)$ |

