Unit 1 Bare Necessities - Quadratics and Piecewise

Simplifying Radicals

1. If the number is negative, cross out the negative and bring out *i*.
2. Make factor tree.
3. Cross out a group and bring that number out of the radical (no group = stays in)
4. Multiply together numbers that came out of the radical and numbers that stayed in

All Together!!

EX1. $\sqrt{20}$

EX2. $\sqrt{-600}$

You Try!!

1. $\sqrt{1500}$

2. $\sqrt{-12}$

3. $\sqrt{405}$

4. $\sqrt{-80}$

5. $\sqrt{-76}$

6. $\sqrt{-7}$

Solving Quadratic Equations Using the Quadratic Formula

$ax^2 + bx + c = 0$

**must be equal to zero
**helpful if a is positive

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

All Together!!

EX3. $m^2 - 5m - 14 = 0$

EX4. $x^2 - 4x = -9$

EX5. $8n^2 - 18 = 4n$

You Try!!

7. $8a^2 + 6a = -5$

8. $2k^2 - 7k - 13 = -10$

9. $2x^2 - 3x - 5 = 0$

10. $h^2 = 9h - 20$

11. $2x^2 + 4x + 3 = 0$

12. $9b^2 - 6b - 3 = 8$

Vertex of a Parabola

1. Find x by using the formula $x = \frac{-b}{2a}$.
2. Substitute x value in to find y value.
3. Write as a point.

All Together!!

EX6. $y = 2x^2 + 10x - 4$

You Try!!

13. $y = 3x^2 - 12x + 5$

14. $y = -x^2 + 2x + 3$

15. $y = -2x^2 - 16x - 35$

16. $y = 3x^2 + 24x + 49$

Evaluate Piecewise Functions

1. Use the inequalities to determine which piece to use.
2. Substitute in the number for x.

All Together!!

$$f(x) = \begin{cases} 3x - 9, x < -3 \\ 8x^2, x \geq -3 \end{cases}$$

EX7. $f(8)$ EX8. $f(-10)$ EX9. $f(-3)$ EX10. $f(-1)$

You Try!!

$$g(x) = \begin{cases} 9 - x, x \leq 2 \\ 3x + 1, x > 2 \end{cases}$$

17. $g(1)$ 18. $g(9)$ 19. $g(2)$

20. $g(0)$ 21. $g(-3)$ 22. $g(17)$