

4.7 - Quadratic Formula and Mixed Review

Date _____

Solve each equation with the quadratic formula.

1) $4x^2 - 70 = -6x$

A) $\left\{ \frac{7}{2}, -5 \right\}$

B) $\left\{ \frac{5 + \sqrt{385}}{12}, \frac{5 - \sqrt{385}}{12} \right\}$

C) $\left\{ -3 + \sqrt{79}, -3 - \sqrt{79} \right\}$

D) $\left\{ \frac{-5 + \sqrt{385}}{12}, \frac{-5 - \sqrt{385}}{12} \right\}$

2) $m^2 = 6 + 5m$

A) $\{3, 2\}$

B) $\{10, -10\}$

C) $\{6, -1\}$

D) $\left\{ \frac{2\sqrt{10}}{5}, -\frac{2\sqrt{10}}{5} \right\}$

3) $9b^2 - 6b = 18$

A) $\left\{ \frac{1 + \sqrt{19}}{3}, \frac{1 - \sqrt{19}}{3} \right\}$

B) $\left\{ \frac{3 + \sqrt{7}}{2}, \frac{3 - \sqrt{7}}{2} \right\}$

C) $\{2, 1\}$

D) $\{-3 + 3\sqrt{3}, -3 - 3\sqrt{3}\}$

4) $8b^2 = 5 + 4b$

A) $\left\{ \frac{3}{2}, \frac{1}{2} \right\}$

B) $\{4 + \sqrt{13}, 4 - \sqrt{13}\}$

C) $\{3, -3\}$

D) $\left\{ \frac{1 + \sqrt{11}}{4}, \frac{1 - \sqrt{11}}{4} \right\}$

Solve each equation by factoring. (set = 0 and solve)

5) $r^2 - r = 20$

$r^2 - r - 20 = 0$

$(r-5)(r+4) = 0$

$r-5=0$ $r+4=0$

$r=5$ $r=-4$

6) $r^2 - 4r = 5$

$x=5$ $x=-1$

Solve each equation by taking square roots. (get x^2 by itself, then $\sqrt{\quad}$)

7) $7n^2 - 7 = 611$

$\frac{7n^2}{7} = \frac{618}{7}$

$\sqrt{n^2} = \sqrt{88}$

$n = \pm 2\sqrt{22}$

8) $2r^2 - 3 = 21$

$x = \pm 2\sqrt{3}$

Solve each equation by completing the square.

$$9) r^2 + 8r - 1 = 0$$

$$\frac{+1 \quad +1}{r^2 + 8r + 16 = 1 + 16}$$

$$\sqrt{(r+4)^2} = \sqrt{17}$$

$$r+4 = \pm\sqrt{17}$$

$$r = -4 \pm \sqrt{17}$$

$$10) b^2 + 12b + 24 = 0$$

$$x = -6 \pm 2\sqrt{3}$$

Solve each equation with the quadratic formula.

$$11) 10n^2 + 2 = 3n$$

$$\frac{-3n \quad -3n}{10n^2 - 3n + 2 = 0} \quad a=10 \quad b=-3 \quad c=2$$

$$\frac{3 \pm \sqrt{(-3)^2 - 4(10)(2)}}{2(10)} = \frac{3 \pm \sqrt{-71}}{20} = \text{No real solutions}$$

$$12) 5p^2 + 8p = 21$$

$$x = 7/5 \quad x = -3$$

Simplify.

$$13) 3\sqrt{3} - 2\sqrt{2} - 3\sqrt{2}$$

$$3\sqrt{3} - 5\sqrt{2}$$

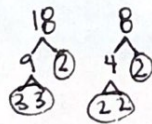
$$14) -2\sqrt{3} - \sqrt{6} - 2\sqrt{3}$$

$$x = -4\sqrt{3} - \sqrt{6}$$

$$15) -\sqrt{18} - 3\sqrt{8}$$

$$-3\sqrt{2} - 6\sqrt{2}$$

$$-9\sqrt{2}$$



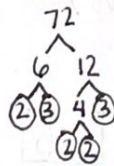
$$16) -3\sqrt{2} - 3\sqrt{8}$$

$$-9\sqrt{2}$$

$$17) -4\sqrt{6} \cdot -3\sqrt{12} = 12\sqrt{72}$$

$$12 \cdot 2 \cdot 3\sqrt{2}$$

$$= 72\sqrt{2}$$



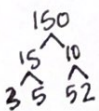
$$18) \sqrt{6} \cdot -5\sqrt{10}$$

$$-10\sqrt{15}$$

$$19) 2\sqrt{15}(\sqrt{10} + \sqrt{2})$$

$$2\sqrt{150} + 2\sqrt{30}$$

$$10\sqrt{6} + 2\sqrt{30}$$



$$20) 4\sqrt{5}(3 + \sqrt{10})$$

$$12\sqrt{5} + 20\sqrt{2}$$