

Name _____

All work must be shown to receive credit for each problem.

- How would the graph of $\sqrt{x+4} - 3$ differ from \sqrt{x} ?
(A) vertex at $\langle 4, 3 \rangle$ (C) vertex at $\langle -4, -3 \rangle$
(B) vertex at $\langle 0, -3 \rangle$ (D) vertex at $\langle -4, 0 \rangle$
- Find the vertex, the y-intercept, and x-intercepts (if any) for $5(x-1)^2 - 20$.
(A) $\langle 1, -20 \rangle; \langle 0, -15 \rangle; \{ \langle 3, 0 \rangle, \langle -1, 0 \rangle \}$ (C) $\langle 1, -20 \rangle; \langle 0, -15 \rangle; \{ \langle 0, 0 \rangle, \}$
(B) $\langle 1, -20 \rangle; \langle 0, -15 \rangle; \emptyset$ (D) $\langle 1, -20 \rangle; \langle 0, -15 \rangle; \{ \langle 1, 0 \rangle, \langle -1, 0 \rangle \}$
- Find the vertex, the y-intercept, and x-intercepts (if any) for $2x^2 - 12x + 26$.
(A) $\langle 3, 8 \rangle; \langle 0, 26 \rangle; \emptyset$ (C) $\langle 3, 8 \rangle; \langle 0, 26 \rangle; \{ \langle 0, 0 \rangle \}$
(B) $\langle 0, 26 \rangle; \langle 3, 8 \rangle; \emptyset$ (D) $\langle 3, 8 \rangle; \langle 0, 26 \rangle; \{ \langle 6, 0 \rangle, \langle -7, 0 \rangle \}$
- Find the vertex, the y-intercept, and x-intercepts (if any) for $3x^2 + 7$.
(A) $\langle 0, 7 \rangle; \langle 0, 7 \rangle; \emptyset$ (C) $\langle 0, 7 \rangle; \langle 0, 7 \rangle; \{ \langle 0, 0 \rangle \}$
(B) $\langle 0, 7 \rangle; \langle 0, 7 \rangle; \{ \langle 0, 7 \rangle \}$ (D) $\langle 0, 0 \rangle; \langle 0, 7 \rangle; \mathbb{R}$
- Write an equivalent equation of the form $y = a(x-h) + k$ to $6x^2 + 12x + 3$.
(A) $6(x+1)^2 - 3$ (C) $6(x+2)^2 + 3$
(B) $(x+1)^2 - \frac{1}{2}$ (D) $3(x-2)^2 + 9$
- Solve $4x^2 \leq 15 - 17x$ for x .
(A) $x \leq -5 \vee x \geq \frac{3}{4}$ (B) $-5 \leq x \leq \frac{3}{4}$ (C) \emptyset (D) \mathbb{R}
- Solve $t^2 + 34 > 12t$ for t .
(A) $6 - \sqrt{2} < t < 6 + \sqrt{2}$ (C) $t > 6 - \sqrt{2}$
(B) \emptyset (D) $t < 6 - \sqrt{2} \vee t > 6 + \sqrt{2}$
- Solve $|2 - 4x| = 1$ for x .
(A) $x = \frac{1}{4} \vee x = \frac{3}{4}$ (B) $x = \frac{1}{4} \wedge x = \frac{3}{4}$ (C) \emptyset (D) \mathbb{R}

9. Solve $6u = |1 + 3u|$ for u .

- (A) $u = \frac{1}{3}$ (B) \emptyset (C) -2 (D) $u = -\frac{1}{3}$

10. Solve $|12x + 1| \leq 9$ for x .

- (A) \emptyset (C) $-\frac{5}{6} \leq x \leq \frac{2}{3}$
(B) $-5 \leq x \leq 4$ (D) $x \leq -\frac{5}{6} \vee x \geq \frac{2}{3}$

11. Solve $|4 - 3z| > 7$ for z .

- (A) $z < -1 \vee z > \frac{11}{3}$ (C) $z < \frac{11}{3}$
(B) $-1 < z < \frac{11}{3}$ (D) \emptyset

12. Given $f(x) = 4x^2 + 3x - 1$ and $g(x) = 2 - x^2$, compute $\frac{f}{g}(-2)$.

- (A) $-\frac{9}{2}$ (B) $\frac{9}{2}$ (C) -2 (D) 4

13. Given $f(x) = \sqrt{x} - 2$ and $g(x) = (x + 2)^2$, compute $f \circ g(x)$.

- (A) $(\sqrt{x} - 2)^2$ (C) x
(B) $(\sqrt{x} + 2)^2$ (D) x^2

14. Given $f(x) = \sqrt{x} - 2$ and $g(x) = (x + 2)^2$, compute $g \circ f(1)$.

- (A) 0 (B) 1 (C) $1 \pm 2i$ (D) $\sqrt{2}$

15. Divide $8x^2 - 4x + 1$ by $x + 6$.

- (A) $8x - 44 + \frac{255}{x + 6}$ (C) $8x - 52$
(B) $8x - 52 + \frac{313}{x + 6}$ (D) $8x - 44$