

College Prep Algebra
Worksheet 1.4-1.5

Solve the equation.

1. $2x^3 - 3x^2 - 18x + 27 = 0$

$\pm 3, \frac{3}{2}$

2. $x^3 - 36x = 0$

$0, \pm 6$

3. $x^4 - 12x^2 + 32 = 0$

$\pm 2, \pm 2\sqrt{2}$

4. $x^4 - 81 = 0$

$\pm 3, \pm 3i$

5. $3x^{\frac{2}{3}} - 16x^{\frac{1}{3}} = -5$

$\sqrt[3]{125}, \frac{\sqrt[3]{27}}{27}$

6. $4x^{\frac{2}{3}} + 5x^{\frac{1}{3}} - 6 = 0$

$2i\sqrt{2}, \frac{\sqrt[3]{27}}{8}$

7. $\sqrt{x-1} = \sqrt{5-x}$

3

8. $\frac{2}{x+1} - \frac{2}{5} = \frac{3}{x+4}$

$-\frac{7}{2}$

9. $x^{\frac{2}{3}} - 4 = 5$

27

10. $3\sqrt{x-1} = x+2$

$\frac{5 \pm 3i\sqrt{3}}{2}$

11. $\frac{2x}{x+3} + \frac{x+2}{x-2} = \frac{x-1}{x+3}$

$\frac{1 \pm i\sqrt{6}}{2}$

12. $x^{\frac{1}{4}} + 19 = 21$

16

Solve each inequality. Write your answer in interval notation.

13. $2x - 7 \geq 19$ or $3x + 4 < 13$

$(-\infty, 3) \cup (13, \infty)$

14. $2x - 3 < 11$ and $-3x - 5 \leq 7$

$[-4, 7)$

15. $|3x - 7| > 11$

$(-\infty, -\frac{4}{3}) \cup (4, \infty)$

16. $|3x + 3| \leq 12$

$[-5, 3]$

Use the critical value method to solve each inequality. Write your answer in interval notation.

17. $x^2 - 2x - 8 < 0$

$(-2, 4)$

18. $2x^3 + x^2 - 8x - 4 \geq 0$

$[-2, -\frac{1}{2}] \cup [2, \infty)$

19. $\frac{x-3}{x+2} \geq 0$

$(-\infty, -2] \cup [3, \infty)$

20. $\frac{3x-1}{x-2} < 4$

$(-\infty, 2) \cap (7, \infty)$