

1. Factor completely: $4x^2 - 32x$

$$4x(x-8)$$

2. Solve algebraically: $x^2 - 11x = -24$

$$x=3 \quad x=8$$

3. Given the following: $(3x^3 - 15x^2 - 6x + 12) \div (x - 5)$

a. Divide with a method of your choosing.

$$3x^2 - 6 + \frac{-18}{x-5}$$

b. Is $x - 5$ a factor of the polynomial? Explain.

No

↓
 remainder
 other than zero

4. Given: $6x^4 - 11x^3 + 19x^2 - 23x + 4$

a. How many solutions are there? 4

b. Describe how or list the steps you would use to find those solutions. DO NOT SOLVE.

- ① Graphing Calc → real roots (x-intercepts)
- ② Synthetic Division → Quadratic
- ③ Quadratic Formula (imaginary or other roots)

5. Simplify: $\frac{n}{n-3} + \frac{2n+2}{n^2-2n-3}$

$$\frac{n+2}{n-3}$$

$$n \neq 3, -1$$

6. Simplify: $\frac{x^2-9}{4x-24} \div \frac{6x-18}{8x+16}$

$$\frac{(x+3)(x-2)}{3(x-6)}$$

$$x \neq 6, 3, -2$$

For questions #7-10, solve and check your solutions.

7. $\frac{x-3}{5} = \frac{8}{x}$

$$x = 8, x = -5$$

$$x \neq 0$$

8. $\frac{x}{5} + \frac{9x-7}{5x+10} = \frac{7}{x+2}$

$$x = -14, x = 3$$

$$x \neq -2$$

9. $\sqrt[3]{c-1} = 2$

$$c = 9$$

10. $5 + \sqrt{4y-5} = 12$

$$y = 13.5$$

$$f(x) = \sqrt{4x-1}$$

$$g(x) = 3x^2 + 5$$

$$h(x) = x^3 + 1$$

11. Find $f(g(x))$

$$12x + 2$$

12. Find $h^{-1}(x)$

$$h^{-1}(x) = \sqrt[3]{x-1}$$