

Factor the polynomial, or identify it as irreducible.

1. $x^3 + x^2 - 12x$

$$x(x+4)(x-3)$$

3. $x^3 - 125$

$$(x-5)(x^2+5x+25)$$

5. $8x^3 + 125$

$$(2x+5)(4x^2-10x+25)$$

7. $216x^3 + 64$

$$8(27x^3+8)$$
$$8(3x+2)(9x^2-6x+4)$$

9. $10x^3 - 80$

$$10(x^3-8)$$
$$10(x-2)(x^2+2x+4)$$

11. $x^3 + 10x^2 + 16x$

$$x(x+8)(x+2)$$

2. $x^3 + 5$

irreducible

4. $x^3 + 5x^2 + 6x$

$$x(x+3)(x+2)$$

6. $2x^3 + 6x$

$$2x(x^2+3)$$

8. $8x^3 - 64$

$$8(x^3-8)$$
$$8(x-2)(x^2+2x+4)$$

10. $2x^4 + 7x^3 + 5x^2$

$$x^2(x+1)(2x+5)$$

12. $x^3 + 9769$

irreducible

Secondary III 6-3 HW
Factoring Polynomials
Factor the polynomial by grouping.

Name: _____

13. $x^3 + 8x^2 + 6x + 48$

$(x+8)(x^2+6)$

15. $8x^4 + 8x^3 + 27x + 27$

$(2x+3)(4x^2-6x+9)(x+1)$

17. $x^3 + 2x^2 + 3x + 6$

$(x+2)(x^2+3)$

14. $x^3 + 4x^2 - x - 4$

$(x+4)(x-1)(x+1)$

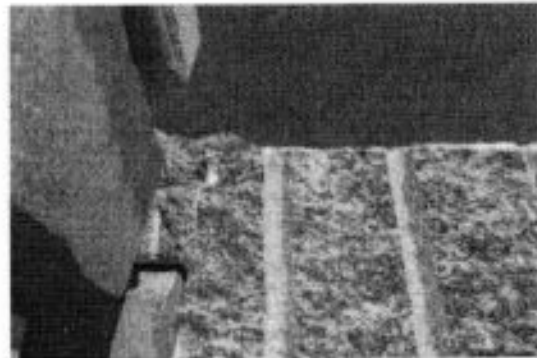
16. $27x^4 + 54x^3 - 64x - 128$

$(x+2)(3x-4)(9x^2+12x+16)$

18. $4x^4 - 4x^3 - x + 1$

$(4x^3-1)(x-1)$

22. **Construction** A piece of granite is being cut for a building foundation. You want its length to be 8 times its height and its width to be 3 times its height. If you want the granite to be 648 cubic yards, what will its length, width, and height be?



$l = 8h$
 $w = 3h$
 $h = h$
 $V = l \cdot w \cdot h$
 $648 = 8h \cdot 3h \cdot h$
 $648 = 24h^3$

$\sqrt[3]{27} = h$
 $h = 3 \text{ yd}$ $l = 24 \text{ yd}$ $w = 9 \text{ yd}$

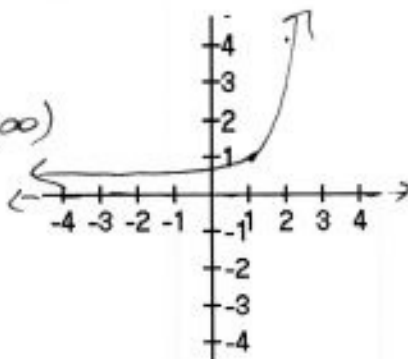
Review

Graph each function and state the domain and range

a. $g(x) = 3(2)^{x-1}$

Domain: $(-\infty, \infty)$

Range: $(0, \infty)$



b. $f(x) = -2\sqrt{x} + 3$

Domain: $[0, \infty)$

Range: $(-\infty, 3]$

$(-\infty, 3]$

