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Algebra 2

## Algebra I Factoring Review

Factor each expression

1.  $\frac{4x+8}{4(x+2)}$

2.  $\frac{12x+18}{6}$   
 $6(2x+3)$

3.  $\frac{x^2-7x}{x}$   
 $x(x-7)$

4.  $\frac{2x^2-4xy}{2x}$   
 $2x(x-2y)$

5.  $\frac{5x^2y-20x}{5x}$   
 $5x(xy-4)$

6.  $\sqrt{x^2-64}$   
 $(x+8)(x-8)$

7.  $\sqrt{y^2-36}$   
 $(y+6)(y-6)$

8.  $\sqrt{4t^2-25}$   
 $(2t+5)(2t-5)$

9.  $\sqrt{9x^2-16y^4}$   
 $(3x+4y^2)(3x-4y^2)$

10.  $\sqrt{36-25x^2}$   
 $(6+5x)(6-5x)$

11.  $\sqrt{100y^4-49t^6}$   
 $(10y^2-7t^3)(10y^2+7t^3)$

12.  $\sqrt{1-9x^8y^4}$   
 $(1+3x^4y^2)(1-3x^4y^2)$

$$13. x^2 + 4x - 12$$

$$(x+6)(x-2)$$

$$15. m^2 - 8m + 15$$

$$(m-5)(m-3)$$

$$17. y^2 + 5y - 14$$

$$(y+7)(y-2)$$

$$19. x^2 - 3x - 10$$

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

$$21. x^2 - 9x - 36$$

$$(x-12)(x+3)$$

$$23. x^4 + 4x^2 - 12$$

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

$$25. x^4 - 8x^2 - 9$$

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

$$27. \frac{2x^2 - 50}{2}$$

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

$$14. y^2 + 3y + 2$$

$$(y+2)(y+1)$$

$$16. x^2 - 8x - 20$$

$$(x-10)(x+2)$$

$$18. x^2 + x - 12$$

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

$$20. x^2 - 7x + 12$$

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

$$22. y^2 - 21y + 110$$

$$(y-11)(y-10)$$

$$24. x^6 - 6x^3 + 9$$

$$(x^3-3)(x^3-3)$$

$$26. x^4 + x^2 - 2$$

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

$$28. \frac{2x^2 - 8x - 10}{2}$$

$$2(x^2-4x-5)$$
$$2(x-5)(x+1)$$

$$28. \frac{3x^2 + 9x - 12}{2}$$

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

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

$$30. \frac{2x^2 + 14x + 24}{2}$$

$$2(x^2 + 7x + 12)$$

$$2(x+4)(x+3)$$

$$32. \frac{ax^2 - 2ax - 8a}{a}$$

$$a(x^2 - 2x - 8)$$

$$a(x-4)(x+2)$$

$$34. \frac{12x^2 - 75}{3}$$

$$3(4x^2 - 25)$$

$$3(2x+5)(2x-5)$$

$$36. 2y^2 - 5y - 7 \text{ PT}$$

$$y^2 - 5y - 14$$

$$(y-7)(y+2)$$

$$(2y-7)(y+1)$$

$$38. 3y^2 + 4y + 1 \text{ PT}$$

$$y^2 + 4y + 3$$

$$(y+3)(y+1)$$

$$(y+1)(3y+1)$$

$$40. 2x^2 + 7x - 4 \text{ PT}$$

$$x^2 + 7x - 8$$

$$(x+8)(x-1)$$

$$(x+4)(2x-1)$$

$$42. 2x^2 - 9x - 18 \text{ PT}$$

$$x^2 - 9x - 36$$

$$(x-12)(x+3)$$

$$(x-6)(2x+3)$$

$$(x-6)(2x+3)$$

$$29. \frac{6x^2 - 54}{6}$$

$$6(x^2 - 9)$$

$$6(x+3)(x-3)$$

$$31. \frac{5x^2 - 500}{5}$$

$$5(x^2 - 100)$$

$$5(x+10)(x-10)$$

$$33. \frac{yx^2 - 64y}{y}$$

$$y(x^2 - 64)$$

$$y(x+8)(x-8)$$

$$35. \sqrt{x^2 - 81}$$

$$(x^2 - 9)(x^2 + 9)$$

$$(x+3)(x-3)(x^2 + 9)$$

$$37. 2x^2 + 15x - 8 \text{ PT}$$

$$x^2 + 15x - 16$$

$$(x+16)(x-1)$$

$$(x+8)(2x-1)$$

$$39. 2x^2 + 13x + 6 \text{ PT}$$

$$x^2 + 13x + 12$$

$$(x+12)(x+1)$$

$$(x+6)(2x+1)$$

$$41. 6x^2 - 11x - 10 \text{ PT}$$

$$x^2 - 11x - 60$$

$$(x-15)(x+4)$$

$$(x-\frac{5}{2})(x+\frac{2}{3})$$

$$43. 3x^2 + 2x - 8 \text{ PT}$$

$$x^2 + 2x - 24$$

$$(x+6)(x-4)$$

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

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

$$\begin{aligned}
 & \text{PT} \\
 44. & \quad 8x^2 + 7x - 1 \\
 & \quad x^2 + 7x - 8 \\
 & \quad \frac{(x+8)(x-1)}{\frac{8}{8}} \\
 & \quad (x+1)(8x-1)
 \end{aligned}$$

$$\begin{aligned}
 & \text{PT} \\
 45. & \quad 6x^2 + x - 12 \\
 & \quad x^2 + x - 12 \\
 & \quad \frac{(x+9)(x-8)}{\frac{6}{6}} \\
 & \quad (x+\frac{3}{2})(x-\frac{4}{3})
 \end{aligned}$$

$$\begin{aligned}
 46. & \text{ Factor completely: } \frac{6x^2 - 4x - 2}{2} \\
 & \quad \frac{2(3x^2 - 2x - 1)}{2} \text{ PT} \\
 & \quad 2(x^2 - 2x - 3) \\
 & \quad 2(x-3)(x+1) \\
 & \quad \frac{2}{3} \quad \frac{3}{3}
 \end{aligned}$$

$$47. \text{ Simplify: } \frac{3x^2 - 8x + 4}{3} \text{ PT}$$

$$\begin{aligned}
 & \quad x^2 - 8x + 12 \\
 & \quad \frac{(x-6)(x-2)}{\frac{3}{3}}
 \end{aligned}$$

$$(x-2)(3x-2)$$

48. Factor the expression  $x^4 + 6x^2 - 7$  completely.

$$\begin{aligned}
 & \quad (x^2+7)(x^2-1) \\
 & \quad (x^2+7)(x+1)(x-1)
 \end{aligned}$$

49. Factor completely, the expression:  $\frac{2x^3 - 2x^2 - 12x}{2x}$

$$\begin{aligned}
 & \quad 2x(x^2 - x - 6) \\
 & \quad 2x(x-3)(x+2)
 \end{aligned}$$