HW 5 - 1 Answers

1. $3(x^2 - 2)(x + 7)$
2. $(5y + 7)(2x + 3)$
3. $(x + 9)(x^2 - 2)$
4. $(4x - 1)(x + 7)$
5. $-9(2x + 3)$
6. $(3x + 4)(2x - 3)$
7. $(4x + 1)(2x - 3)$
8. $(x - 5)(x + 1)(x - 2)^2$
9. $(5 - x)(25 + 5x + x^2)$
10. $(2y^2 - 3)(4y^4 + 6y + 9)$

Factor each of the following:

1. $3x^3 + 21x^2 - 6x - 42$

$= 3x^2(x+7) - 6(x+7)$

$= (3x^2 - 6)(x+7)$

$= 3(x^2-2)(x+7)$

2. $10xy + 14x + 15y + 21$

$= 2x(5y+7) + 3(5y+7)$

$= (5y+7)(2x+3)$

3. $x^3 + 9x^2 - 2x - 18$

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

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

4. $(4x - 1)(3x + 2) - (4x - 1)(2x - 5)$

$= (4x-1)(3x+2-(2x-5))$

$= (4x-1)(3x+2-2x+5)$

$= (4x-1)(x+7)$

5. $(2x + 3)(x - 4) - (2x + 3)(x + 5)$

$= (2x+3)(x-4-(x+5))$

$= (2x+3)(x-4-x-5)$

$= -9(2x+3)$

6. $6x^2 - x - 12$

$p: -72$
$s: -1$
$-9, 8$

$= 6x^2 - 9x + 8x - 12$

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

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

7. $8x^2 - 10x - 3$

$p: -24$
$s: -10$
$-12, 2$

$= 8x^2 - 12x + 2x - 3$

$= 4x(2x-3) + 1(2x-3)$

$= (2x-3)(4x+1)$

8. $(x^2 - 4x)^2 - (x^2 - 4x) - 20$

Let $u = x^2 - 4x$

$u^2 - u - 20$

$= (u-5)(u+4)$

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

$= (x-5)(x+1)(x-2)(x-2)$

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

9. $125 - x^3$

$a = 5$
$b = x$
$(5-x)(25+5x+x^2)$

10. $8y^6 - 27$

$a = 2y$
$b = 3$
$(2y-3)(4y^2+6y+9)$

tricky, tricky

13. $y^6 - 64$ DOTS 1st!

$(y^3 + 8)(y^3 - 8)$ $a = \sqrt[3]{y^3} = y$ $b = \sqrt[3]{8} = 2$

$(y+2)(y^2-2y+4)(y-2)(y^2+2y+4)$