Answers to homework questions

(15) $6+x^2+x$

x^2+x+6 m: 6 6,1 A: 1

not factorable

(26) $64x^3-1$ $a^3-b^3=(a-b)(a^2+ab+b^2)$

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

$(4x-1)(16x^2+4x\cdot 1+1)$

$(4x-1)(16x^2+4x+1)$

(16) $x^2-15-2x$

$x^2-2x-15$ m: -15 3,-5 a: -2

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

(22) $49-x^2$

$(7)^2-(x)^2$

$(7+x)(7-x)$

$\cancel{(x+7)(x-7)}$

Review: Factoring

Factor

a) $3m^2 - 15m$

$3m(m-5)$

b) $-4x + 12x^2$

$-4x(1-3x)$

c) $x^2 + x - 2$

M: -2

A: 1 $2, -1$

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

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

M: -5

A: 4 $-1, 5$

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

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

Review: Solving *linear* equations

a) Solve: $3x + 12 = 0$

$3x = -12$

$x = -4$

b) Solve: $4w - 1 = 0$

$4w = 1$

$w = \frac{1}{4}$

Methods for solving quadratic equations → two solutions

1. Factoring
2. Quadratic Formula
3. Completing the square
4. Square roots
5. Graphing

Solve. (in other words, find *all* values of x that make each statement true)

1. $(x-3)(x+5)=0$

$(3-3)(3+5) \stackrel{?}{=} 0$
$0 \cdot 8 = 0$
$0 = 0$

$(-5-3)(-5+5) \stackrel{?}{=} 0$
$-8 \quad 0 = 0$

$x-3=0 \quad x+5=0$
$x=3 \quad x=-5$

2. $2x(3x-1)=0$

$2x=0 \quad 3x-1=0$
$x=0 \quad 3x=1$
$x=\frac{1}{3}$

Solve by factoring.

3. $x^2+2x=0$

$x(x+2)=0$
$x=0 \quad x+2=0$
$x=-2$

4. $5y^2-20y=0$

$5y(y-4)=0$
$5y=0 \quad y-4=0$
$y=0 \quad y=4$

5. $x^2+10x+24=0$ m: 24 A: 10 6, 4

$(x+6)(x+4)=0$
$x+6=0 \quad x+4=0$
$x=-6 \quad x=-4$

6. ~~$y^2-y+12=0$~~ -3, -4

$y^2+12=7y$
$y^2-7y+12=0$ m: 12 A: -7
$(y-3)(y-4)=0$
$y-3=0 \quad y-4=0$
$y=3 \quad y=4$

7. $x^2+x=-7$

$x^2+x+7=0$ m: 7 A: 1
not factorable

8. $-4y-21=-y^2$

$y^2-4y-21=0$ m: -21 A: -4 -7, 3
$(y-7)(y+3)=0$
$y-7=0 \quad y+3=0$
$y=7 \quad y=-3$

Homework
Worksheet: Solve by factoring