

For question 1 - 3, (a) **simplify** and write in standard form and (b) **classify** using the degree and # of terms.

1. $(8x^3 + 14x^2 - 2) + (-2x^3 + 7)$

a. $6x^3 + 14x^2 + 5$

b. Cubic trinomial

2. $(x^5 - 10x^3 + 5x - 3) - (x^4 - 5x^3 + 1)$

a. $x^5 - x^4 - 5x^3 + 5x - 4$

b. Quintic polynomial

3. $(3x + 6)(2x - 4)$

a. $6x^2 - 24$

b. Quadratic Binomial

4. Find the length of the rectangular room if the area

is $x^2 + 16x + 60$ and the width is $x + 10$.

$(x+10)(x + \square) = (x+10)(x+6)$
 ~ length

Factor Completely. SHOW ALL WORK. (Standard Math 3 SKIP #10).

5. $x^2 + 3x - 40$

$(x+8)(x-5)$

6. $2x^2 - 10x + 8$

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

7. $2x^3 - 13x^2 - 7x$

$x(2x^2 - 13x - 7)$
 $x(2x+1)(x-7)$

x	-7
2x ²	-14x
1x	-7

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

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

9. $12x^5 - 2x^4 - 30x + 5$

$(2x^4-5)(6x-1)$

6x-1
12x ⁵ -2x ⁴
-30x+5

10. $8x^3 + 216y^3$

$(2x+6y)(4x^2-12xy+3y^2)$

Solve by factoring. Show ALL work and give exact answers.

12. $2x^2 + 15x = 8 \rightarrow 2x^2 + 15x - 8 = 0$

$(2x-1)(x+8) = 0$

$x = \frac{1}{2} \quad x = -8$

*	-16
-16	+ -1
	15

x	8
2x ²	16x
-1x	-8

13. Solve by square roots. Give exact answers.

$\frac{2x^2 + 18 = 0}{2 \quad 2 \quad 2}$

$\sqrt{x^2} = \sqrt{-9}$

$x = \pm 3i$

14. Solve by completing the square. Give exact answers.

$$\frac{2x^2}{2} - \frac{24x}{2} + \frac{10}{2} = 0$$

$$x^2 - 12x + 5 = 0$$

$$x^2 - 12x + \boxed{36} = -5 + \boxed{36}$$

$$\sqrt{(x-6)^2} = \sqrt{31}$$

$$x - 6 = \pm \sqrt{31}$$

$$x = 6 \pm \sqrt{31}$$

15. Solve by the quadratic formula. Give exact answers.

$$2x^2 - 7x + 8 = 0$$

$$a = 2 \quad b = -7 \quad c = 8$$

$$x = \frac{-(-7) \pm \sqrt{(-7)^2 - 4(2)(8)}}{2(2)}$$

$$x = \frac{7 \pm \sqrt{\cancel{15} - 15}}{4} \leftarrow -15$$

$$= \frac{7 \pm \sqrt{15}i}{4}$$