

Cumulative Test

17A

1. ⁽⁶⁸⁾ A penny is dropped from a 512-foot tall tower. The equation $512 - h = 16t^2$ can be used to find the height h of the penny after falling for t seconds. Estimate the height of the penny after falling 2 seconds.

2. ⁽⁶⁹⁾ Determine whether the side lengths below form a Pythagorean triple.
10, 24, 26

Simplify problems 3–5.

3. ⁽⁷⁰⁾ $\sqrt{3(2 + \sqrt{6})}$

4. ⁽⁵⁹⁾ $(2x + 4)(-3x^2 + 5x + 3)$

5. ⁽⁶¹⁾ $\sqrt{9s^4t^5}$

6. ⁽⁶⁰⁾ Tell whether the set of ordered pairs below represents a direct variation. If the set of ordered pairs represents a direct variation, find the constant of variation.
(3, -15), (-2, 10), (-4, 20)

7. ⁽⁶⁵⁾ Determine whether the lines are parallel.

Line 1: $y = \frac{3}{5}x - 9$

Line 2: $10x - 6y = 18$

Factor the trinomials in problems 8–10.

8. ⁽⁷²⁾ $-2x^3 - 4x^2 + 16x$

9. ⁽⁷³⁾ $x^2 + 6xy + 8y^2$

10. ⁽⁷⁰⁾ $-22x + 12 + 8x^2$

11. ⁽⁷⁷⁾ Jim borrows \$95 from his parents.

They agree to subtract \$10 from the loan for each hour he does chores around the house. To find the number of hours x he needs to do chores before he owes less than \$50, solve the inequality $95 - 10x < 50$.

12. ⁽⁶³⁾ Determine whether the polynomial $x^2 + 8x + 16$ is a perfect-square trinomial. If it is, factor the trinomial.

13. ⁽⁶²⁾ Suppose that 7 cards each contain one letter from the word RACCOON. Make a bar graph to represent the frequency distribution for all possible outcomes. Find the theoretical probability of each outcome.

14. ⁽⁷⁸⁾ Identify the asymptotes and graph the function below.

$$y = \frac{4}{x + 3}$$

15. ⁽⁷⁴⁾ Solve the disjunction
 $3x + 2 < 8$ OR $2x - 5 \geq 5$.

Cumulative Test

contin.

17A

16. ⁽⁶⁹⁾ Subtract $a\sqrt{12a} - \sqrt{48a^3}$.

17. ⁽⁶⁴⁾ If y varies inversely as x and $y = 8$ when $x = 6$, find x when $y = 4$.

18. ⁽⁶³⁾ Write the polynomial $4a^2 + 2a + a^3$ in standard form. Then write the leading coefficient.

- Solve the inequalities in problems 19–20 and graph them on a number line.

19. ⁽⁶⁷⁾ $3x + 2 > -4x - 12$

20. ⁽⁶²⁾ $-8 \leq 4x - 2 + 2x \leq 10$

51a-h = 16t^2 t=2
 51a-h = 16(2)^2
 51a-h = 16(4)
~~51a-h = 64~~
~~51a-h = 64~~
~~51a-h = 64~~
 h = 448 feet

a^2 + b^2 = c^2
 10^2 + 24^2 = 26^2
 100 + 576 = 676
 676 = 676
 Yes!

$\sqrt{3(2+\sqrt{6})}$
 $2\sqrt{3} + \sqrt{18}$
 $2\sqrt{3} + \sqrt{3 \cdot 6 \cdot 3}$
 $2\sqrt{3} + 3\sqrt{2}$
 $2\sqrt{3} + 3\sqrt{2}$
 $(2x+4)(3x^2+5x+3)$
 $-6x^3 + 10x^2 + 6x - 12x^2 + 20x + 12$
 $-6x^3 - 2x^2 + 26x + 12$

$\sqrt{9s^4t^5}$
 Escaping!
 $3s^2t^2\sqrt{t}$
 $3s^2t^2\sqrt{t}$

6. $y = k \cdot x$
 (3, 15) → -15 = 3k
 (-2, 10) → 10 = -2k
 (-4, 20) → 20 = 4k
 Yes!
 Constant = 5
 k = -5 in all of them

7. Line 1: $y = \frac{3}{5}x - 9$ ← slope is $\frac{3}{5}$
 Line 2: $10x - 6y = 18$ ← slope is $\frac{5}{3}$
 Not Parallel!
 Different slopes

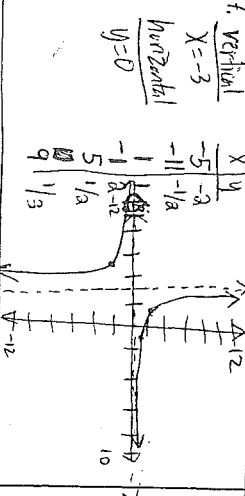
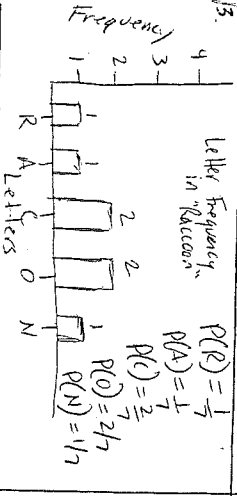
8. $-2x^3 - 4x^2 + 16x$
 $-2x(x^2 + 2x - 8)$
 $-2x(x+4)(x-2)$
 Divide out -2x
 Add to 2
 Mult. to -8

9. $x^2 + 6xy + 8y^2$
 $(x+4y)(x+2y)$
 Mult. to 8
 Add to 6

10. $-22x + 12 + 8x^2$
 $8x^2 - 22x + 12$
 $2(4x^2 - 11x + 6)$
 $2(2x-6)(2x-1)$
 $2(2x-3)(2x-2)$
 $2(4x-3)(x-2)$
 Re-write correctly.
 Divide by 2
 Guess & Check
 Nope
 Nope
 Nope
 Yes!

11. $\sqrt{5} - 10x < 50$
 $-\sqrt{5} - 10x < -45$
 $-10x < -45 + \sqrt{5}$
 $-10x < -45$
 $x > 4.5$
 More than 4.5 hours
 Flip symbol
 by dividing
 by negative

12. $x^2 + 8x + 16$
 $(x+4)(x+4)$
 $(x+4)^2$
 Yes!
 I know sq. root of 16.
 Fancy!
 Parts



15. $3x + x < 8$ OR $2x - 6 \geq 5$
 $\frac{4x}{2} < \frac{8}{2}$ OR $\frac{2x}{1} \geq \frac{11}{1}$
 $2x < 4$ OR $2x \geq 11$
 $x < 2$ OR $x \geq 5.5$

16. $a\sqrt{12a} - \sqrt{48a^3}$
 $a\sqrt{2 \cdot 2 \cdot 3 \cdot a} - \sqrt{2 \cdot 2 \cdot 2 \cdot 3 \cdot a \cdot a}$
 $2a\sqrt{3a} - 2\sqrt{3a}$
 $2a\sqrt{3a} - 2\sqrt{3a}$
 $2\sqrt{3a}(a-1)$

17. $y = \frac{k}{x}$
 $y = 8$
 $x = 6$
 $8 = \frac{k}{6}$
 $8 \cdot 6 = \frac{k}{1}$
 $48 = k$
 $y = \frac{48}{x}$
 $y = 4$
 $4 = \frac{48}{x}$
 $4x = 48$
 $x = 12$

18. Standard Form
 $a^3 + 4a^2 + 2a$
 Leading Coef. = 1
 It's not with the
 but it's a!

19. $3x + 2 > 2x - 12$
 $3x - 2x > -12 - 2$
 $x > -14$
 $x > -2$

20. $-8 \leq 4x - 2 + 2x \leq 10$
 $-8 \leq 6x - 2 \leq 10$
 $-6 \leq 6x \leq 12$
 $-1 \leq x \leq 2$