

**MATHEMATICS 260 SAMPLE TEST CHAPTER 1 --- STEWART'S PRECALCULUS
INSTRUCTOR: ANNE SISWANTO; TOTAL POINTS: 100; TIME: 70 MINUTES**

DIRECTION: GRAPHING CALCULATORS ARE NOT ALLOWED. SHOW ALL WORKS ON THE TEST PAPER FOR FULL CREDIT. THE SAMPLE TEST IS LONGER THAN THE ACTUAL TEST.

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Solve the problem.

- 1) Noah and Ben are running in the Walker Street Fun Run. Noah runs at 7 mph, Ben at 5 mph. If they start at the same time, how long will it be before they are $\frac{1}{3}$ mile apart?
- 2) In a chemistry class, 9 liters of a 4% silver iodide solution must be mixed with a 10% solution to get a 6% solution. How many liters of the 10% solution are needed?

Find the quotient. Write the answer in standard form.

3) $\frac{8 + 2i}{4 - 6i}$

4) $\frac{-3}{-i}$

Solve by Factoring.

5) $30x^2 + 47x + 14 = 0$

Solve by completing the square.

6) $x^2 + 8x = 7$

Solve the equation using the quadratic formula.

7) $4x^2 = -12x - 3$

Solve the cubic equation.

8) $x^3 + 8 = 0$

Solve the problem.

- 9) The height of a box is 9 inches. The length is three inches more than the width. Find the width if the volume is 792.
- 10) A rug is to fit in a room so that a border of even width is left on all four sides. If the room is 12 feet by 15 feet and the area of the rug is 108 square feet, how wide will the border be?

Decide what values of the variable cannot possibly be solutions for the equation.

11) $\frac{1}{x-2} - \frac{1}{x+8} = 12$

Solve the equation.

12) $\frac{16}{x+2} = 1 + \frac{2}{x-4}$

13) $\sqrt{2x+3} - \sqrt{x+1} = 1$

14) $(x-2)^4 - 5(x-2)^2 + 4 = 0$

Solve the quadratic inequality. Write the solution set in interval notation.

15) $x^2 + 5x - 6 > 0$

Solve. Provide answers in interval notation.

16) $x^2(x+16)^2 \geq 0$

Solve the rational inequality. Write the solution set in interval notation.

$$17) \frac{2x}{-4x+1} \geq 11$$

$$18) \frac{2x+11}{x-6} \leq 0$$

Solve the inequality. Write the solution set in interval notation.

$$19) |2 - 3x| \leq 11$$

$$20) \left| \frac{5}{8} - \frac{1}{7}x \right| < \frac{2}{9}$$

Solve.

$$21) |4x + 2| + 3 = 10$$

$$22) |4x + 8| - 4 < -2$$

$$23) |3x + 1| + 1 > 4$$

Decide whether or not the points are the vertices of a right triangle.

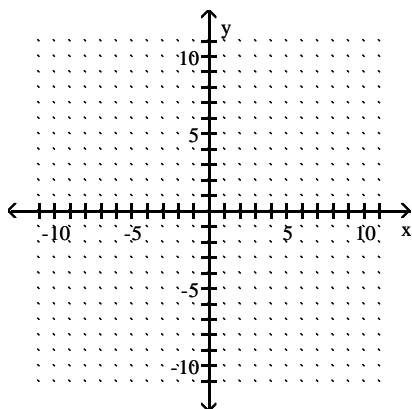
$$24) (-6, 13), (-4, 17), (-2, 16)$$

Determine if the points are collinear.

$$25) (-6, -7), (-1, -8), (-11, -6)$$

Graph the circle.

$$26) (x - 3)^2 + (y - 6)^2 = 16$$



Find the center and radius of the circle.

$$27) x^2 + y^2 - 12x + 16y + 36 = 0$$

Solve.

28) A circle has a diameter with endpoints $(-2, 1)$ and $(22, 21)$. Find the coordinates of the center.

Given an endpoint of a line segment and its midpoint, find the other endpoint.

29) If $(9, 8)$ is the endpoint of a line segment, and $(13, 3)$ is its midpoint, find the other endpoint.

Give the domain and range of the relation.

$$30) y = (x + 3)^2 - 3$$

$$31) y = \sqrt{9 + x}$$

$$32) y = \frac{13}{8 - x}$$

Find an equation of the line satisfying the conditions. Write the equation in slope-intercept form.

33) Through $(-6, 5)$; parallel to $-7x + 5y = 57$

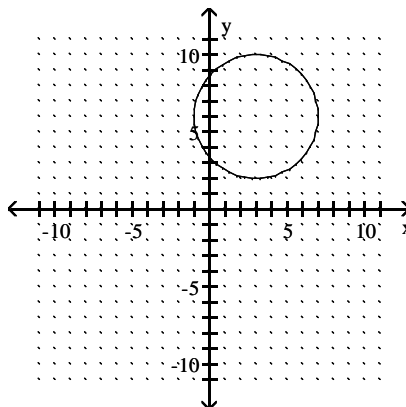
34) Through $(-3, 8)$; perpendicular to $-3x + 4y = -23$

Answer Key

Testname: M260T1S_STEWART

- 1) 10 minutes
- 2) 4.5 liters
- 3) $\frac{5}{13} + \frac{14}{13}i$
- 4) $-3i$
- 5) $\left\{-\frac{7}{6}, -\frac{2}{5}\right\}$
- 6) $\{-4 \pm \sqrt{23}\}$
- 7) $\left\{\frac{-3 \pm \sqrt{6}}{2}\right\}$
- 8) $\{-2, 1 \pm i\sqrt{3}\}$
- 9) 8 in.
- 10) 1.5 ft
- 11) $-8, 2$
- 12) $\{6, 10\}$
- 13) $\{3, -1\}$
- 14) $\{0, 1, 3, 4\}$
- 15) $(-\infty, -6) \cup (1, \infty)$
- 16) $(-\infty, \infty)$
- 17) $\left[\frac{11}{46}, \frac{1}{4}\right)$
- 18) $\left[-\frac{11}{2}, 6\right)$
- 19) $\left[-3, \frac{13}{3}\right]$
- 20) $\left(\frac{203}{72}, \frac{427}{72}\right)$
- 21) $\left\{\frac{5}{4}, -\frac{9}{4}\right\}$
- 22) $\left\{-\frac{5}{2}, -\frac{3}{2}\right\}$
- 23) $\left(-\infty, -\frac{4}{3}\right) \cup \left(\frac{2}{3}, \infty\right)$
- 24) Yes
- 25) Yes

26)



- 27) $(6, -8); r = 8$
- 28) $(10, 11)$
- 29) $(17, -2)$
- 30) $D = (-\infty, \infty); R = [-3, \infty)$
- 31) $D = [-9, \infty); R = [0, \infty)$
- 32) $D = (-\infty, 8) \cup (8, \infty); R = (-\infty, 0) \cup (0, \infty)$
- 33) $y = \frac{7}{5}x + \frac{67}{5}$
- 34) $y = -\frac{4}{3}x + 4$