

This review will be identical in topics and format to the exam. Only the actual numerical values and the spacing of the problems will be different.

#1-20: See multiple-choice packet.

#21-22: Use synthetic division to divide the polynomials.

$$21. \quad \frac{x^2 + 14x + 38}{x + 8}$$

$$22. \quad \frac{-5x^2 + 8x + x^3 + 4}{x - 1}$$

#23-24: Use long division to divide the polynomials.

$$23. \quad \frac{2x^2 + 3x - 1}{x - 2}$$

$$24. \quad \frac{x^3 + 7x^2 + 14x + 3}{x + 2}$$

#25: Solve the word problems. Be sure to indicate units of measure in your final answer.

25. The maximum profit  $P$  (in hundreds of dollars) for a company that makes depends on the amount  $x$  (in hundreds of dollars) that the company spends on advertising according to this model:  $P = 230 + 20x - 0.5x^2$

What expenditure for advertising will yield maximum profit?

Name \_\_\_\_\_

**MULTIPLE CHOICE.** Choose the one alternative that best completes the statement or answers the question.

If the following is a polynomial function, then state its degree and leading coefficient. If it is not, then state this fact.

1)  $f(x) = -13x^8 + 9x - 1$

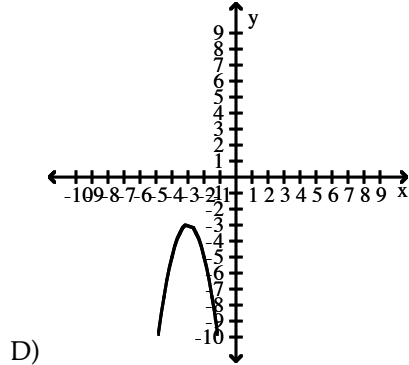
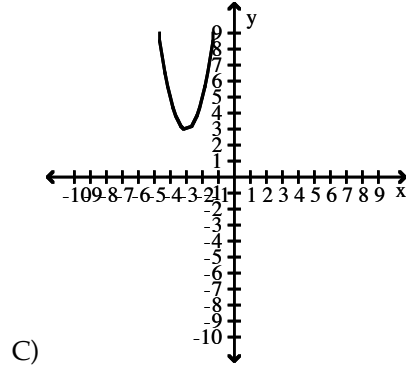
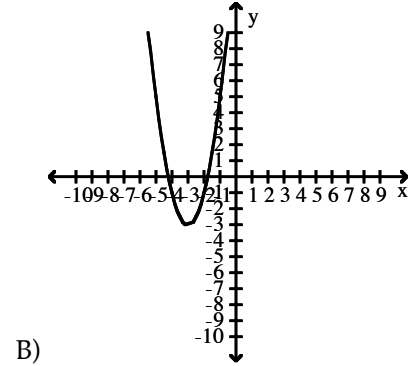
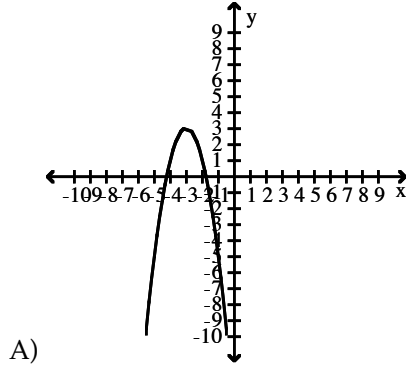
- A) Degree: -13; leading coefficient: 8  
 C) Degree: 8; leading coefficient: -13

- B) Degree: 9; leading coefficient: -13  
 D) Not a polynomial function.

1) \_\_\_\_\_

**Match the equation to the correct graph.**

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



2) \_\_\_\_\_

**Find the vertex of the graph of the function.**

3)  $f(x) = (x + 3)^2 + 3$

- A) (-3, 3)                      B) (0, -3)                      C) (3, 0)                      D) (3, -3)

3) \_\_\_\_\_

4)  $f(x) = 4x^2 + 8x + 1$

- A) (2, 4)                      B) (-1, -3)                      C) (-3, -1)                      D) (4, 2)

4) \_\_\_\_\_

**Find the axis of the graph of the function.**

5)  $f(x) = (x + 4)^2 - 9$

- A)  $y = 4$                       B)  $x = -4$                       C)  $y = 9$                       D)  $x = 9$

5) \_\_\_\_\_

6)  $f(x) = 3x^2 - 6x + 5$

- A)  $x = 0$                       B)  $x = 2$                       C)  $x = 1$                       D)  $x = -1$

6) \_\_\_\_\_

7)  $f(x) = 4(x - 2)^2 + 4$

A)  $x = 2$

B)  $y = -2$

C)  $x = -2$

D)  $y = 2$

7) \_\_\_\_\_

**Write the quadratic function in vertex form.**

8)  $y = x^2 + 4x + 3$

A)  $y = (x - 2)^2 + 1$

B)  $y = (x - 2)^2 - 1$

C)  $y = (x + 2)^2 + 1$

D)  $y = (x + 2)^2 - 1$

8) \_\_\_\_\_

**Write an equation for the quadratic function whose graph contains the given vertex and point.**

9) Vertex (5, 1), point (2, 28)

A)  $P(x) = 3x^2 - 5x + 1$

B)  $P(x) = 3x^2 - 30x + 76$

C)  $P(x) = -3x^2 - 30x + 1$

D)  $P(x) = 2x^2 - 30x + 76$

9) \_\_\_\_\_

10) Vertex (-5, 6), point (0, 56)

(Write your answer in vertex form.)

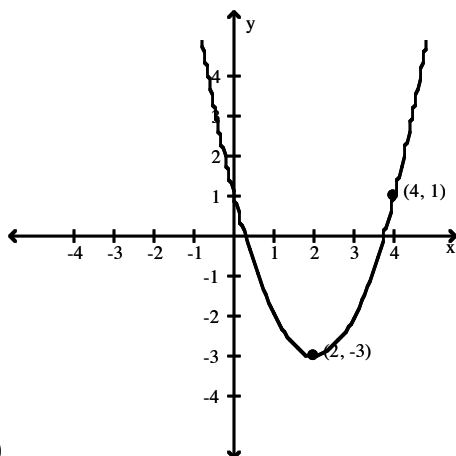
A)  $P(x) = 2(x - 5)^2 + 6$

B)  $P(x) = 2(x + 5)^2 + 6$

C)  $P(x) = \frac{62}{25}(x + 5)^2 - 6$

D)  $P(x) = (x + 5)^2 + 31$

10) \_\_\_\_\_



11)

11) \_\_\_\_\_

(Write your answer in vertex form.)

A)  $P(x) = (x + 2)^2 - 3$

B)  $P(x) = (x - 2)^2 - 3$

C)  $P(x) = (x + 3)^2 - 2$

D)  $P(x) = (x - 3)^2 - 2$

**Solve the problem.**

12) A projectile is thrown upward so that its distance above the ground after  $t$  seconds is

$h = -16t^2 + 480t$ . After how many seconds does it reach its maximum height?

A) 15 s

B) 7 s

C) 22.5 s

D) 30 s

12) \_\_\_\_\_

- 13) The number of mosquitoes  $M(x)$ , in millions, in a certain area depends on the June rainfall  $x$ , in inches:  $M(x) = 5x - x^2$ . What rainfall produces the maximum number of mosquitoes? 13) \_\_\_\_\_
- A) 0 in.                      B) 25 in.                      C) 5 in.                      D) 2.5 in.

**Write the sum or difference in the standard form  $a + bi$ .**

- 14)  $(6 - 4i) + (3 + 6i)$  14) \_\_\_\_\_
- A)  $9 + 2i$                       B)  $-9 - 2i$                       C)  $9 - 2i$                       D)  $3 + 10i$

- 15)  $(7 + 3i) - (-3 + i)$  15) \_\_\_\_\_
- A)  $-10 - 2i$                       B)  $4 + 4i$                       C)  $10 - 2i$                       D)  $10 + 2i$

**Write the product in standard form.**

- 16)  $2i(3 - 5i)$  16) \_\_\_\_\_
- A)  $6i - 10i^2$                       B)  $6i - 10$                       C)  $10 + 6i$                       D)  $6i + 10i^2$

- 17)  $(6 + 9i)(9 - 5i)$  17) \_\_\_\_\_
- A)  $99 + 51i$                       B)  $99 - 51i$   
 C)  $9 + 111i$                       D)  $-45i^2 + 51i + 54$

**Write the expression in the form  $bi$ , where  $b$  is a real number.**

- 18)  $\sqrt{-9}$  18) \_\_\_\_\_
- A)  $-3i$                       B)  $3i$                       C)  $\pm 3$                       D)  $-i\sqrt{3}$

- 19)  $\sqrt{-297}$  19) \_\_\_\_\_
- A)  $3\sqrt{33}$                       B)  $-3i\sqrt{33}$                       C)  $-3\sqrt{33}$                       D)  $3i\sqrt{33}$

**Write the expression in standard form.**

- 20)  $\frac{6 + 3i}{7 - 9i}$  20) \_\_\_\_\_
- A)  $\frac{3}{26} + \frac{15}{26}i$                       B)  $\frac{69}{26} + \frac{33}{26}i$                       C)  $-\frac{69}{32} + \frac{15}{32}i$                       D)  $-\frac{3}{32} + \frac{15}{32}i$

## Answer Key

Testname: SPC\_CH2A\_REVIEW

- 1) C
- 2) B
- 3) A
- 4) B
- 5) B
- 6) C
- 7) A
- 8) D
- 9) B
- 10) B
- 11) B
- 12) A
- 13) D
- 14) A
- 15) D
- 16) C
- 17) A
- 18) B
- 19) D
- 20) A