

## Practice Exam Chapters 5 & 6

Determine the degree of the polynomial.

1)  $9x^2y + 4xy^5 + x^3y^4 + 2x^4$

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

Rewrite the polynomial in descending order.

2)  $-10 - 8p^2 + 6p^9 + 4p^3 + p$

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

Find the function value.

3) Find  $P(-3)$ :  $P(x) = -5x^3 + 3x^2 + 12$

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

Solve the problem.

4) The position of an object moving in a straight line is given by  $s = 8t^2 - 3t$ , where  $s$  is in meters and  $t$  is the time in seconds the object has been in motion. How far will an object move in 14 seconds?

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

Add.

$$5) (9n^5 + 4n - 2n^2) + (4n^2 + 6n^5 - 2n)$$

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

Subtract.

$$6) (3x^5 + 7x^7 - 2 - 2x^6) - (-6 + 4x^6 + 9x^7 + 6x^5)$$

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

Perform the indicated operations.

$$7) (4k^2 + 3k + 5) - (2k^2 - 3k - 1) + (3k^2 + 3k + 1)$$

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

Find the product.

$$8) -3x^6(8x - 10)$$

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

Multiply.

$$9) (x + 7)(x + 5)$$

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

10)  $(-2a + 7b)(-6a - 7b)$

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

11)  $(2x + 5y)(-4x - 8y + 1)$

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

12)  $(10m + 7)^2$

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

13)  $(10p + 9)(10p - 9)$

13) \_\_\_\_\_

Write an equivalent expression by factoring out the greatest common factor.

14)  $10m^8 + 6m^6 + 10m^4$

14) \_\_\_\_\_

Factor out a factor with a negative coefficient.

15)  $-2x^2 + 6x - 30$

15) \_\_\_\_\_

Write an equivalent expression by factoring.

16)  $18x^2 - 15x + 30x - 25$

16) \_\_\_\_\_

Factor.

17)  $p^2 - 13p + 42$

17) \_\_\_\_\_

18)  $4x^2 - 4x - 24$

18) \_\_\_\_\_

19)  $15z^2 + 11z - 12$

19) \_\_\_\_\_

20)  $8x^2 + 65x - 63$

20) \_\_\_\_\_

21)  $24z^4 + 42z^2 + 9$

21) \_\_\_\_\_

22)  $12x^3 - 52x^2 - 40x$

22) \_\_\_\_\_

23)  $9x^2 - 18xy + 8y^2$

23) \_\_\_\_\_

24)  $x^2 + 71x + 72$

24) \_\_\_\_\_

Factor completely.

25)  $z^2 + 6z + 9$

25) \_\_\_\_\_

26)  $81x^2 - 16$

26) \_\_\_\_\_

27)  $32x^4 - 200$

27) \_\_\_\_\_

28)  $27a^3 - 125b^3$

28) \_\_\_\_\_

29)  $t^3 + 1000$

29) \_\_\_\_\_

Solve the equation.

30)  $2x^2 - 16x + 30 = 0$

30) \_\_\_\_\_

31)  $x^2 - x = 30$

31) \_\_\_\_\_

32)  $12c^3 - 8c^2 - 15c = 0$

32) \_\_\_\_\_

Solve the problem.

33) Let  $g(x) = 3x + x^2$ . Find  $a$  so that  $g(a) = 4$ .

33) \_\_\_\_\_

34) If  $f(x) = 3x^3 - 3x$  and  $g(x) = -4x - 4x^2$ , find all  $x$ -values for which  $f(x) = g(x)$ .

34) \_\_\_\_\_

Find the domain of the function  $h$ .

$$35) h(x) = \frac{1}{x^2 - 4x - 12}$$

35) \_\_\_\_\_

Solve.

36) Find two consecutive integers such that the sum of their squares is 265.

36) \_\_\_\_\_

37) The length of a rectangular frame is 7 cm more than the width. The area inside the frame is 60 square cm. Find the width of the frame.

37) \_\_\_\_\_

Solve the equation. Round to the nearest tenth, if necessary.

38) If an object is thrown upward from the ground with an initial velocity of 80 ft/sec, its height after  $t$  sec is given by  $h = 80t - 16t^2$ . Find the number of seconds before the object hits the ground.

38) \_\_\_\_\_

Determine the domain of the rational function.

$$39) f(x) = \frac{x - 8}{7 - x}$$

39) \_\_\_\_\_

Find the function value, provided it exists.

$$40) f(x) = \frac{2x - 3}{2x^2 - 3x + 3}; \text{ find } f(-4)$$

40) \_\_\_\_\_

Simplify by removing a factor equal to 1.

$$41) \frac{y^2 + 8y + 16}{y^2 + 10y + 24}$$

41) \_\_\_\_\_

Multiply and simplify.

$$42) \frac{k^2 + 12k + 32}{k^2 + 14k + 48} \cdot \frac{k^2 + 6k}{k^2 - 4k - 32}$$

42) \_\_\_\_\_

Divide and simplify.

$$43) \frac{20x^{10}}{50y^7} \div \frac{50x^6}{50y^4}$$

43) \_\_\_\_\_

$$44) \frac{y^3 - 10y}{y^2 - 100} \div \frac{y^2 - 14y + 45}{y^2 + 5y - 50}$$

44) \_\_\_\_\_

Perform the indicated operation and simplify.

$$45) \frac{x + 4y}{x + y} + \frac{2x - y}{x + y}$$

45) \_\_\_\_\_

$$46) \frac{6x}{x^2 - 16} - \frac{x}{x - 4}$$

46) \_\_\_\_\_

$$47) \frac{7x}{x^2 - 5x + 6} - \frac{28}{x^2 - 6x + 8}$$

47) \_\_\_\_\_

Perform the indicated operation.

$$48) \frac{6}{4 - y} - \frac{5}{y - 4}$$

48) \_\_\_\_\_

Simplify.

$$49) \frac{2x + \frac{4y}{x}}{\frac{y}{3x^2} + \frac{1}{6}}$$

49) \_\_\_\_\_

$$50) \frac{m^{-1} + z^{-1}}{m^{-1} - z^{-1}}$$

50) \_\_\_\_\_

Solve.

$$51) \frac{6}{5x} + \frac{1}{2x} = -\frac{1}{10}$$

51) \_\_\_\_\_

$$52) \frac{y}{y+4} + \frac{8y+28}{y^2+7y+12} = \frac{4}{y+3}$$

52) \_\_\_\_\_

Find all values of  $a$  for which  $f(a)$  is the indicated value.

$$53) f(x) = \frac{x-3}{x+1}; f(a) = \frac{3}{5}$$

53) \_\_\_\_\_

For the pair of functions  $f$  and  $g$ , find all values of  $a$  for which  $f(a) = g(a)$ .

$$54) f(x) = \frac{x - 9}{100},$$

$$g(x) = \frac{1}{x - 9}$$

54) \_\_\_\_\_

Solve.

55) Frank can type a report in 4 hours and James takes 5 hours. How long will it take the two of them typing together?

55) \_\_\_\_\_

56) A plane flies 490 miles with the wind and 350 miles against the wind in the same length of time. If the speed of the wind is 23 mph, what is the speed of the plane in still air?

56) \_\_\_\_\_

Divide.

$$57) \frac{49x^3 - 42x^2 - 35x + 3}{7x}$$

57) \_\_\_\_\_

$$58) (p^2 + 6p - 10) \div (p + 8)$$

58) \_\_\_\_\_

Solve the formula for the specified letter.

59)  $P = \frac{A}{1 + rt}$  for r

59) \_\_\_\_\_

60)  $\frac{1}{a} + \frac{1}{b} = c$  for b

60) \_\_\_\_\_

Solve.

61) The number G of gears a machine can make varies directly as the time T it operates. If it can make 5853 gears in 17 hours, how many gears can it make in 12 hours? Round to the nearest whole number if necessary.

61) \_\_\_\_\_