

Math 3200
Chapter 3 Review

1. For the polynomial, $3x^3 - 2x^8 + 2x - 7$,

a) state the degree

1. a) _____

b) state the linear term

1. b) _____

c) state the leading coefficient

1. c) _____

2. Write a cubic polynomial with no quadratic term, a linear coefficient of -2, and a constant term of 6.

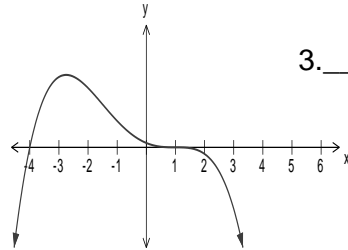
2. _____

3. Which function best describes the graph shown below?

3. _____

(A) $f(x) = -(x-1)^2(x+4)$ (B) $f(x) = -(x-1)^3(x+4)$

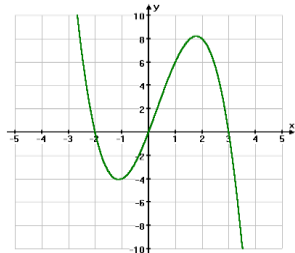
(C) $f(x) = (x+1)^3(x-4)$ (D) $f(x) = (x+4)(x-1)^3$



4. Which of the following describes the type of polynomial function in the graph below?

4. _____

- (A) linear
- (B) quadratic
- (C) cubic
- (D) quartic



5. Which of the following represents the zeros for $p(x) = x^2(3x-2)(x+4)$?

5. _____

- (A) $0, \frac{2}{3}, -4$ (B) $0, -\frac{2}{3}, 4$ (C) $\frac{2}{3}, -4$ (D) $0, \frac{3}{2}, -4$

6. What is the remainder when $(2x^4 + 3x^3 - 7x - 8) \div (x+2)$?

6. _____

- (A) -2 (B) 0 (C) 14 (D) 34

7. What is the value of k if -3 is a zero of $h(x) = kx^2 + 2x - 12$?

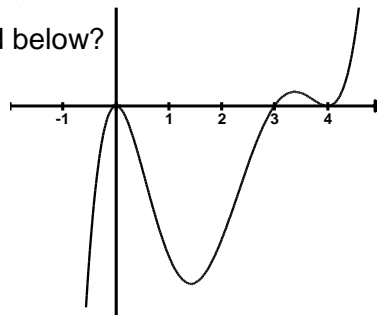
7. _____

- (A) $\frac{2}{3}$ (B) $-\frac{2}{3}$ (C) -2 (D) 2

8. Which function represents the polynomial graphed below?

8. _____

- (A) $y = -(x-3)(x-4)^2(x)$
- (B) $y = (x+3)(x+4)^2(x^2)$
- (C) $y = (x-3)(x-4)^2(x^2)$
- (D) $y = -(x+3)(x+4)^2(x^2)$



9. What are the factors of: $x^5 - 4x^3 + 8x^2 - 32$?

9. _____

- (A) $(x-2)^2(x+2)(x^2+2x+4)$ (B) $(x-2)(x+2)^2(x^2-2x+4)$
(C) $(x+2)^4(x-2)$ (D) $(x-2)^3(x+2)^2$

10. State the degree of the polynomial, $P(x) = -x^3(x-1)^2(x+2)$.

10. _____

- (A) 3 (B) 4 (C) 5 (D) 6

11. What is the remainder when $f(x) = 2x^{78} - 3x^9 + 4$ is divide by $x+1$?

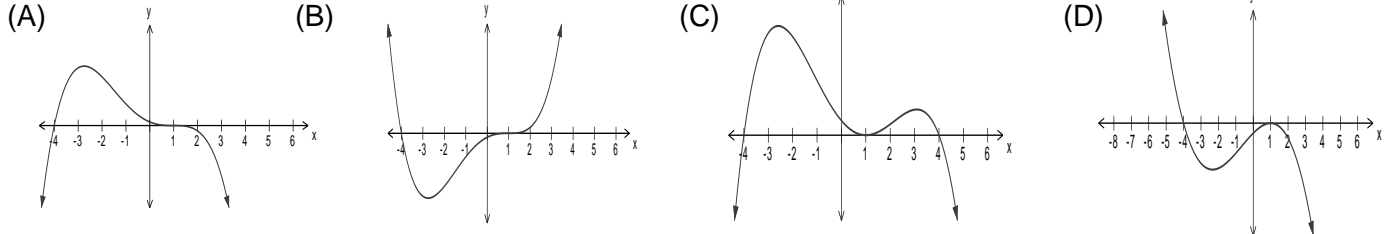
11. _____

- (A) -1 (B) 1 (C) 3 (D) 9

12. A polynomial $P(x)$ is divided by $x+1$ and the answer is expressed in the form, $\frac{P(x)}{x+1} = 2x^2 + x - 1 - \frac{4}{x+1}$, what is $P(x)$? 12. _____

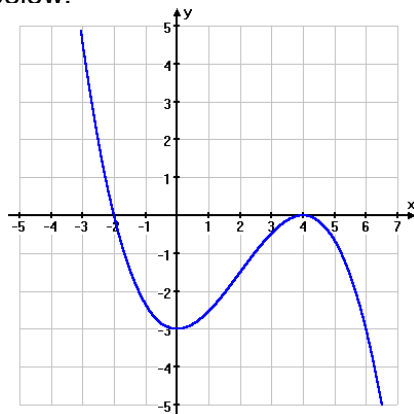
13. Using the Integral Roots Theorem, what are the possible integral roots of $P(x) = 2x^7 - 2x^5 + 4$? 13. _____
 (A) $\pm 2, \pm 4$ (B) $\pm 1, \pm 2, \pm 4$
 (C) $\pm 1, \pm 2$ (D) $\pm 1, \pm 2, \pm 4, \pm 8$

14. Which of the graphs is that of a polynomial of even degree with a root of multiplicity 2 and a negative leading coefficient?



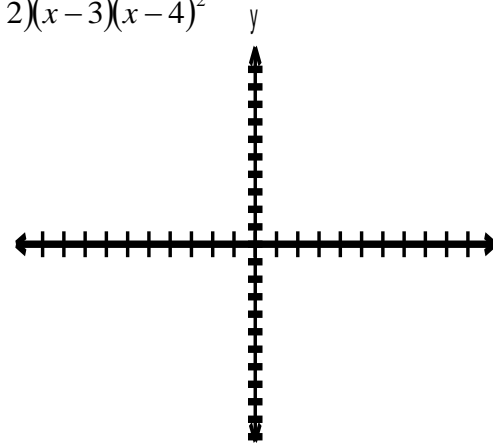
15. What is the maximum number of turns in the graph of the polynomial, $P(x) = 7x^6 - 2x^5 + 4$?
 (A) 7 (B) 6 (C) 5 (D) 3

16. Determine the equation of the polynomial function (in factored form) based on the graph given below.



17. Sketch the graph of the function:

$$P(x) = \frac{1}{2}(x+2)(x-3)(x-4)^2$$



18. Use long division to determine the quotient and remainder for, $(2x^4 - 5x^2 + 2x - 3) \div (x - 2)$

19. Write the equation of a cubic polynomial given, $P(1) = P(-2) = P(4) = 0$ and $P(2) = 16$

20. If $(x+2)$ is a factor of $\frac{k^2x^3}{4} - kx^2 + 3x + 12$, find the value of k .

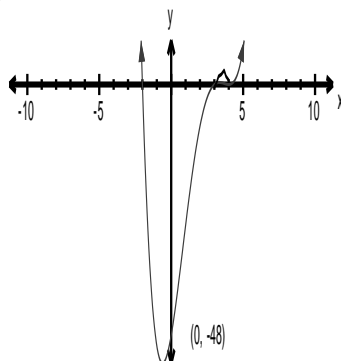
Answers

1 a) 8 b) $2x$ c) -2

2. Ex: $4x^3 - 2x + 6$ (many possibilities for leading coefficient)

3.B 4. C 5. A 6. C 7. D 8. C 9. B
 10. D 11. D 12. $P(x) = 2x^3 + 3x^2 - 5$ 13. B 14. C 15. C

16. $P(x) = -\frac{3}{32}(x+2)(x-4)^2$ 17.



18. Q: $2x^3 + 4x^2 + 3x + 8$ R: 13

19. $P(x) = -2(x-1)(x+2)(x-4)$

20. $k = -3, 1$