PCH CH2 Review Problems for Homework

1. Find the complex roots of $x^3 + 3x^2 - 4x = 0$.

2. Write the polynomial equation of least degree having the roots -1, 5, and -3.

3. Solve $\sqrt{4x - 3} + \sqrt{x + 1} = 5$.
A. 3, $\frac{274}{9}$ **B.** 3 **C.** $\frac{274}{9}$ **D.** $\frac{1}{2}$

4. Solve $\sqrt[3]{2x - 5} \geq 3$.
A. $x \geq 7$ **B.** $x \leq 7$ **C.** $x \leq 16$ **D.** $x \geq 16$

5. List all possible rational zeros of $f(x) = 4x^3 + 5x^2 - x + 2$.

6. Determine the rational zeros of $f(x) = x^3 + 4x^2 + 6x + 9$.

7. Find the number of possible positive real zeros and the number of possible negative real zeros of $f(x) = x^3 - 4x^2 - 3x - 9$.

8. Determine between which consecutive integers the real zeros of $f(x) = x^3 + x^2 - 5$ are located.

~~X~~ Approximate the real zeros of $f(x) = x^3 - 2x^2 - 4x - 5$ to the nearest tenth. SKIP

10. Use the upper bound theorem to find the greatest integral lower bound of the zeros of $f(x) = -2x^3 + 4x^2 + 1$.

~~X~~ Decompose $\frac{3x^2 - 20x - 24}{x^3 - x^2 - 12x}$ into partial fractions.
SKIP

12. Find the complex roots of $x^3 + x^2 - 8x - 12 = 0$.
A. 2, 2, 3 **B.** 2, 2, -3 **C.** -2, -2, 3 **D.** 2, -2, -3

13. Write the polynomial equation of least degree for the roots i, $-i$, 1.
A. $x^3 - x^2 + x - 1$ **B.** $x^3 + x^2 + x + 1$
C. $x^3 + x^2 - x - 1$ **D.** $x^3 - x^2 - x + 1$

14. Find the discriminant of $2w^2 - w + 1 = 0$ and describe the nature of the roots.
A. -7; imaginary **B.** 9; real **C.** 1; real **D.** -5; imaginary

15. Find the complex roots of $x^3 + x^2 - 10x + 8 = 0$.

A. 1, 2, 4 B. −1, −2, −4 C. 1, 2, −4 D. −1, 2, −4

16. Write the polynomial equation of least degree for the roots $2i, -2i, -4$.

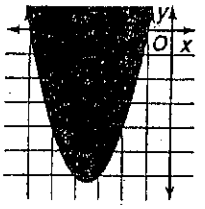
A. $x^3 - 4x^2 + 4x - 16$ B. $x^3 + 4x^2 - 4x - 16$
C. $x^3 + 4x^2 + 4x + 16$ D. $x^3 - 4x^2 - 4x + 16$

17. Find the discriminant of $3m^2 - 4m + 1 = 0$ and describe the nature of the roots.

A. 4; real B. 1; real C. −4; imaginary D. −28; imaginary

18. Which inequality represents the graph?

A. $y \geq x^2 - 6x - 1$
B. $y \geq x^2 + 7x + 6$
C. $y \geq x^2 - 6x - 3.5$
D. $y > x^2 + 6x - 6$



19. Find the number of possible positive real zeros of $f(x) = 6 + x^4 + 2x^2 - 5x^3 - 12x$.

A. 4, 2 or 0 B. 3 or 1 C. 4 D. 1

20. Determine between which consecutive integers the real zeros of $f(x) = 3x^4 + x^3 - 2x^2 + 4$ are located.

A. −1 and 0 B. 0 and 1 C. −2 and −3 D. no real zeros

21. Find all complex roots of $x^3 - 3x^2 + 2x = 0$.

22. Write the polynomial equation of least degree having the roots −1, 4, and −2.

23. Solve $\frac{2x-5}{x} + \frac{4x-1}{x+2} = -\frac{3x+8}{x(x+2)}$.

A. ± 1 B. $-\frac{2}{9}$ C. $-\frac{2}{3}, \frac{1}{2}$ D. $\frac{-1 \pm \sqrt{433}}{12}$

24. Find the number of possible positive real zeros and the number of possible negative real zeros of $f(x) = -x^5 + 4x^4 - 3x^3 - 4x + 2$.

25. Determine between which consecutive integers the real zeros of $f(x) = 2x^3 + 2x^2 + 3x + 1$ are located.

~~26.~~ Approximate the real zeros of $f(x) = -x^3 - x^2 - 5x + 6$ to the nearest tenth. SKIP

27. Use the upper bound theorem to find the least integral upper bound of the zeros of $f(x) = 3x^3 - 4x - 2$.

~~28.~~ Decompose $\frac{6x^2 - 11x - 8}{x^3 - x^2 - 2x}$ into partial fractions. SKIP