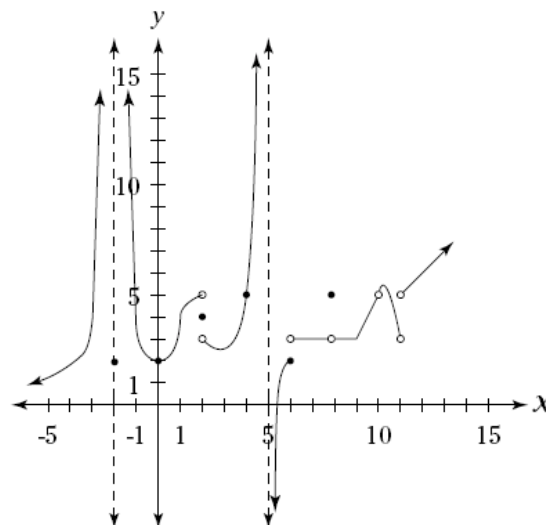


PCPAP TEST: Chapter 1.1-2.2 Form A
No Calculator

Part I: Multiple Choice. Put the CAPITAL letter in each blank to the left of the problem number.

The graph of $g(x)$ is given at right. Use the graph to answer questions 1-4.



_____ 1. $\lim_{x \rightarrow 2^-} g(x) =$ (A) 3 (B) 4 (C) 5 (D) 6 (E) DNE

_____ 2. $\lim_{x \rightarrow 6} g(x) =$ (A) 2 (B) 3 (C) 4 (D) 5 (E) DNE

_____ 3. $\lim_{x \rightarrow 8} g(x) =$ (A) 3 (B) 4 (C) 5 (D) 6 (E) DNE

_____ 4. $g(11) =$ (A) 3 (B) 4 (C) 5 (D) 6 (E) DNE

_____ 5. The function $f(x) = \frac{x(x-1)(x+2)(x-3)(x+4)}{(x+1)(x+2)(x+3)(x-4)}$ has a removable point discontinuity at
(A) $x = -1$ (B) $x = -2$ (C) $x = -3$ (D) $x = 4$ (E) $x = 2$

_____ 6. If $f(x) = \frac{-3}{x-2}$ and $g(x) = \sqrt{x+3}$, what is the domain of $h(x) = f(g(x))$?
(A) $(-3, \infty)$ (B) $[-3, \infty)$ (C) $[-3, 1) \cup (1, \infty)$ (D) $[-3, -1) \cup (-1, \infty)$ (E) $(-\infty, -1) \cup (-1, \infty)$

_____ 7. Expand and simplify the following: $(4\sqrt{x} - 3x^2)\left(\frac{2}{x^2} - 4\right)$
(A) $\frac{8}{\sqrt{x^3}} - 16\sqrt{x} - 6x + 12x^2$ (B) $\frac{8}{\sqrt[3]{x^2}} - 16\sqrt{x} - 6 + 12x^2$ (C) $\frac{8}{\sqrt{x^3}} - 16\sqrt{x} - 6 + 12x^2$
(D) $\frac{8}{\sqrt[3]{x^2}} - 16\sqrt{x} - 6x + 12x^2$ (E) $\frac{8 - 16\sqrt{x} - 6 + 12x^2}{\sqrt{x^3}}$

_____ 8. Simplify: $\frac{4x^2y^{-2} + 3x^{-2}y^3}{xy^{-1} + 2x}$
(A) $\frac{4x^4 + 3y^5}{x^3y + 2x^3y^2}$ (B) $\frac{4x^4\sqrt{y} + 3\sqrt{xy^4}}{1 + 2y}$ (C) $\frac{4x^4y + 3xy^4}{1 + 2x^3y}$ (D) $\frac{4xy + 3y^2}{x^2y + 2x^2}$ (E) $\frac{4x^4 + 3y^5}{2x^3y + x^3y^2}$

_____ 9. Find the domain of $k(x) = \frac{\sqrt[3]{x-1}}{\sqrt{x^2 + x - 20}}$
(A) $[-5, 4]$ (B) $(-\infty, -5] \cup [4, \infty)$ (C) $(-5, 4)$ (D) $(-\infty, -5) \cup (4, \infty)$ (E) $(-5, 1] \cup (4, \infty)$

Part II: Free Response

Show all work in a logical, vertical sequence and use proper notation. Box your final answers. Work each problem below the given line. Be sure to label individual parts appropriately. No credit will be given for any problems worked above the line.

10. For the following functions $f(x) = -6x^2 - x + 2$, $g(x) = \sqrt{21 - 3x}$, $h(x) = 2 - 3x$ $T(x) = x^2 - 2x - 35$ answer the following questions.

(a) Set up the **equation** for the function $k(x) = h(g(x))$, then find the domain.

(b) Sketch the graph of $f(x)$ by factoring the function and finding its x -intercepts. Using the graph, solve the inequality $f(x) < 0$.

(c) Set up the **equation** for the function $J(x) = \frac{g(x)}{T(x)}$, then find the domain of $J(x)$.

(d) Evaluate and completely simplify $\frac{T(x+b) - T(x)}{b}$ for some constant b .
