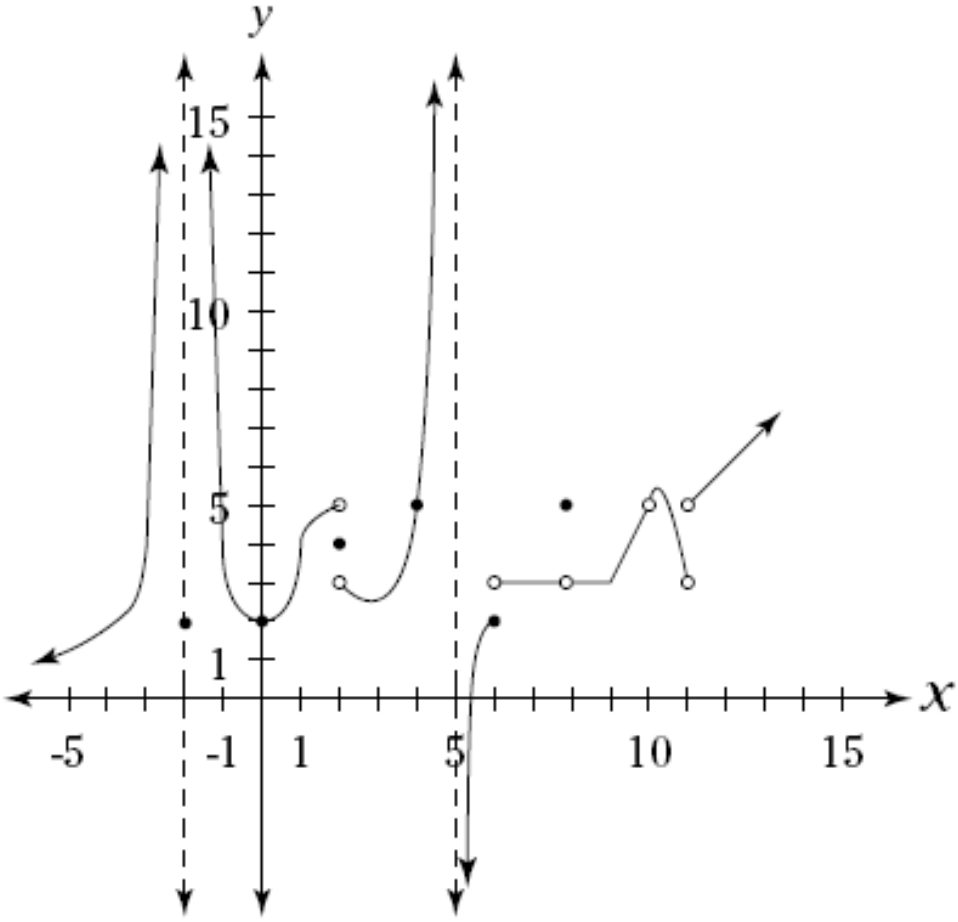
Name_____ Date_____ Period_____

PCPAP TEST: Chapter 1.1-2.2 2015 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 above. **Use the graph to answer questions 1-4.**

____1. $\lim_{x\to 6^+} g(x) =$ (A) 3 (B) 4 (C) 5 (D) 6 (E) DNE

____2. $\lim_{x\to 11^-} g(x) =$ (A) 2 (B) 3 (C) 4 (D) 5 (E) DNE

____3. $\lim_{x\to 8} g(x) =$ (A) 3 (B) 4 (C) 5 (D) 6 (E) DNE

____4. $g(2) =$ (A) 3 (B) 4 (C) 5 (D) 6 (E) DNE

_____ 5. The function $f(x)=\dfrac{x(x+5)(x-7)(2x+1)(3x-2)}{(x-7)(3x-2)(x+5)(2x-1)}$ has a non-removable infinite discontinuity at

(A) $x=7$ (B) $x=\dfrac{2}{3}$ (C) $x=-5$ (D) $x=\dfrac{1}{2}$ (E) $x=0$

_____ 6. If $f(x)=\dfrac{-7}{x+2}$ and $g(x)=\sqrt{2x-1}$, what is the domain of $h(x)=f\left(g(x)\right)$?

(A) $\left(-2,\dfrac{1}{2}\right]$ (B) $(-\infty,-2)\cup\left(-2,-\dfrac{1}{2}\right]$ (C) $\left[\dfrac{1}{2},\dfrac{5}{2}\right)\cup\left(\dfrac{5}{2},\infty\right)$ (D) $\left[\dfrac{1}{2},\infty\right)$ (E) $\left(-\infty,\dfrac{1}{2}\right]$

_____ 7. Expand and simplify the following: $\left(2\sqrt[3]{x}-3x\right)\left(\dfrac{4}{x^2}+5x^2\right)$

(A) $\dfrac{8}{\sqrt[3]{x^5}}+10\sqrt[3]{x^7}-\dfrac{12}{x}-15x^3$ (B) $\dfrac{8}{\sqrt[3]{x^5}}+\sqrt[3]{10x^7}-\dfrac{12}{x}-15x^3$ (C) $\dfrac{8}{\sqrt[3]{x^5}}+10\sqrt[3]{x^7}+12x-15x^3$

(D) $8\sqrt[3]{x^5}+\sqrt[3]{10x^7}-\dfrac{12}{x}-15x^3$ (E) $\dfrac{8}{\sqrt[3]{x^5}}+10\sqrt[3]{x^7}-\dfrac{12}{x}+15x^3$

_____ 8. Simplify: $\dfrac{3xy^2+2x^{-1}y^{-2}}{3x^2y^{-1}+2x^{-1}y^3}$

(A) $\dfrac{3x^3y^2+2x}{3x^2y+2y^3}$ (B) $\dfrac{3xy^3+2x}{3x^2+2xy^5}$ (C) $\dfrac{y^3+1}{x+y}$ (D) $\dfrac{3x^2y^4+2}{3x^3y+2y^5}$ (E) $\dfrac{3x^2y^3-2}{3xy^3+2y^5}$

_____ 9. The domain of the complex fraction $B(x)=\dfrac{\dfrac{5}{x}+\dfrac{x-3}{x-1}}{\dfrac{x-4}{x}}$ is D_B:

(A) $\{x\,|\,x\neq 0,1\}$ (B) $\{x\,|\,x\neq 0,1,4\}$ (C) $\{x\,|\,x\neq 1,4\}$ (D) $\{x\,|\,x\neq 0,1,3\}$ (E) $\{x\,|\,x\neq 0,1,3,5\}$

Part II: Free Response

Show all work in a logical, vertical sequence and use proper notation. Your bottom line in each problem will be your answer. Work each problem in the space provided.

10. For the following functions, $f(x)=3-2\sqrt{9-3x}$, $g(x)=\sqrt{x+18}$, $h(x)=x^2+x-30$ answer the following questions.

(a) Set up and simplify the **equation** for the function $P(x)=g(h(x))$, and then find the domain. Show the work that leads to your answer. Give your domain in either proper set or interval notation.

(b) Set up the **equation** for the function $R(x)=\dfrac{x-1}{g(x)}$, and then find the domain of $R(x)$. Show the work that leads to your answer. Give your domain in either proper set or interval notation.

(c) Set up the **equation** for the function $J(x)=\frac{f(x)}{h(x)}$, and then find the domain of $J(x)$. Show the work that leads to your answer. Give your domain in either proper set or interval notation.

(d) Set up and **completely simplify** $\frac{h(x+w)-h(x)}{w}$ for some constant *w*. Show the work that leads to your answer.