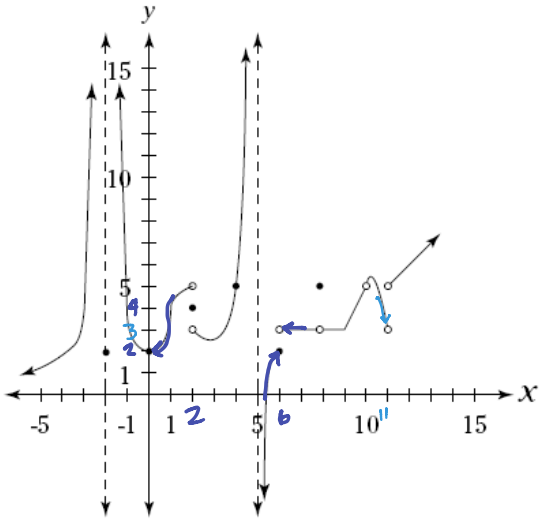
Name KEY Form A Date Period

PCPAP TEST: Chapter 1.1-2.2 2017
No Calculator A

1 B 2 A 3 E 4 B 5 C 6 E 7 D 8 C 9 A

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

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



B 1. $\lim_{x\to 11^-} g(x) =$ (A) 2 (B) 3 (C) 4 (D) 5 (E) DNE

A 2. $\lim_{x\to 0^+} g(x) =$ (A) 2 (B) 3 (C) 4 (D) 6 (E) DNE

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

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

C 5. The function $f(x)=\dfrac{x^2+6x-16}{x^2-9x+14}$ has a removable point discontinuity at

(A) $(2,2)$ (B) $(7,15)$ (C) $(2,-2)$ (D) $(7,-5)$ (E) $(8,-7)$

$f(x)=\dfrac{(x+8)(x-2)}{(x-7)(x-2)}$

Hole @ $(2, \frac{2+8}{2-7})=(2,\frac{10}{-5})=(2,-2)$

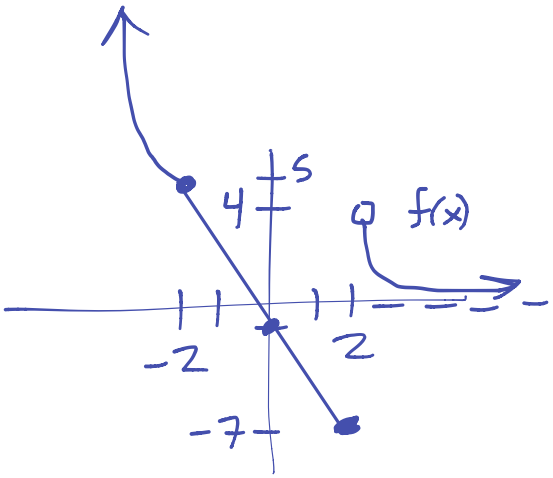
E 6. Simplify: $\dfrac{5x^{-2}y^2+7x^2y^{-3}}{x^{-2}y^{-1}+3x}$

(A) $\dfrac{5x^4+7y^5}{x^3y+3x^3y^2}$ (B) $\dfrac{5x^4\sqrt{y}+7\sqrt{x}y^4}{1+3y}$ (C) $\dfrac{5x^4y+7xy^4}{1+3x^3y}$ (D) $\dfrac{5x^2y^2+7x^2y^3}{x^2y+3x}$ (E) $\dfrac{5y^5+7x^4}{y^2+3x^3y^3}$

$\dfrac{\frac{5y^2}{x^2}+\frac{7x^2}{y^3}}{\frac{1}{x^2y}+\frac{3x}{1}}\left(\frac{x^2y^3}{x^2y^3}\right)$

$\dfrac{5y^5+7x^4}{y^2+3x^3y^3}$

D 7. If $f(x)=\begin{cases} x^2+1, & x\le -2 \\ -3x-1, & -2<x\le 2 \\ \dfrac{8}{x}, & x>2 \end{cases}$



Which of the following is NOT true regarding *f(x)* ?

(A) The domain of g is the set of all real numbers ✓

(B) The $\lim_{x\to 2^-} f(x)=-7$ ✓

(C) The $\lim_{x\to 2^+} f(x)=4$ ✓

(D) There is a vertical asymptote at x = 0 ✗

(E) There is a jump at x = 2 ✓

C 8. Find the domain of $h(x)=\dfrac{\sqrt{x+9}}{\sqrt{x}-1}$. D_h :

(A) $\{x|x\neq 0,1\}$ (B) $\{x|x\ge -9, x\neq 1\}$ (C) $\{x|x\ge 0, x\neq 1\}$ (D) $\{x|x\ge 0\}$ (E) $\{x|x\ge -9, x\neq 0\}$

$x+9\ge 0$ $x\ge 0$ $\sqrt{x}-1\neq 0$

$x\ge -9$ $x\ge 0$ $\sqrt{x}\neq 1$

$x\neq 1$

more restrictive than $x\ge -9$

A 9. . The domain of the complex fraction $B(x)=\dfrac{\frac{5}{2x}+\frac{x+3}{x+5}}{\frac{x-5}{x+5}}$ is D_B : $2x\neq 0$ $x\neq 0$ $x+5\neq 0$ $x\neq -5$ $x-5\neq 0$ $x\neq 5$

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

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.

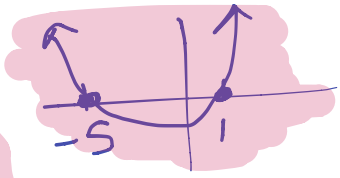
10. For the following functions,
$f(x) = -3\sqrt{-6-2x} + 17$, $g(x) = \sqrt{x+16}$, $h(x) = x^2 + 4x - 21$ answer the following questions.

(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.

$P(x) = \sqrt{(x^2+4x-21)+16}$ or $P(x) = \sqrt{x^2+4x-5}$ √1

$x^2+4x-5 \geq 0$

$(x+5)(x-1) \geq 0$



opens up √2

$D_P: \{x \mid x \leq -5 \text{ or } x \geq 1\}$

or

$D_P: (-\infty, -5] \cup [1, \infty)$ √3

(b) Set up the **equation** for the function $R(x) = \dfrac{2x-8}{g(x)}$, 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.

$R(x) = \dfrac{2x-8}{\sqrt{x+16}}$ √4

Rad: $x+16 \geq 0$ Denom: $\sqrt{x+16} \neq 0$

$x \geq -16$ $x \neq -16$

$D_R: \{x \mid x > -16\}$

or

$D_R: (-16, \infty)$ √5

(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. . DO NOT DOUBLY EXCLUDE ANY VALUES!!!

$J(x)=\dfrac{-3\sqrt{-6-2x}+17}{x^2+4x-21}$ √6

Rad

$-6-2x\geq 0$

$-2x\geq 6$

$x\leq -3$

Denom

$x^2+4x-21\neq 0$

$(x+7)(x-3)\neq 0$

$x\neq -7, x\neq 3$

$D_J:\{x\mid x\leq -3, x\neq -7\}$

or

$D_J:(-\infty,-7)\cup(-7,-3]$ √7

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

$h(x)=x^2+4x-21$

$\dfrac{[(x+p)^2+4(x+p)-21]-[x^2+4x-21]}{p}$ √8

$\dfrac{x^2+2xp+p^2+4x+4p-21-x^2-4x+21}{p}$

$\dfrac{p(2x+p+4)}{p}$

$2x+p+4$ √9