College Algebra - Quiz 4

Name:.

GUST ID:.

9/10

Thursday 29th March, 2018

Notes: For full credit, please **show your calculation methods**. Calculators are **not** permitted.

Questions:

1) Solve the inequality

$$\frac{(x-1)(3-x)}{(x-2)^2} \leq 0$$

$f(x) = \frac{(x-1)(3-x)}{(x-2)^2}$

$0 = \frac{(x-1)(3-x)}{(x-2)^2} \Rightarrow 0 = (x-1)(3-x)$

$x = 1 \quad , \quad x = 3$

$x - 1 = 0 \qquad 3 - x = 0$

$3 = x$

V.A: $x - 2 = 0$

$x = 2$

Ans: $(-\infty, 1) \cup (3, \infty)$

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2) List the potential rational zeros of the polynomial function. Do not find the zeros.

$$f(x) = 2x^5 - 2x^2 + 2x - 1$$

q: 2 — p: -1

p: $\pm 1, \pm 1$

q: $\pm 2, \pm 1$

$$\frac{p}{q} \pm = \frac{1\ 1}{1\ 2} = \pm 1, \pm \frac{1}{2}$$

END OF QUESTIONS

College Algebra - Quiz 5

Name:.....

GUST ID:.....

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Thursday 11th April, 2018

Notes: For full credit, please **show your calculation methods**. Calculators are **not** permitted.

Questions:

1) For the given functions f and g, find the requested composite function value.
$f(x) = 4x + 4$, $g(x) = 4x^2 + 3$; Find:

a) (f ∘ g)(2) $f(g(2))$

$g(2) = 4(2)^2 + 3 = 4(4) + 3 = 16 + 3 = 19$

$f(19) = 4(19) + 4 = 76 + 4 = 80$ ✓

b) (g ∘ f)(1) $g(f(1))$

$f(1) = 4(1) + 4 = 8$

$g(8) = 4(8^2) + 3 = 4(64) + 3 = 259$ ✓

c) (g ∘ g)(-1) $g(g(-1))$

$g(-1) = 4(-1)^2 + 3 = 4 + 3 = 7$

$g(7) = 4(7^2) + 3 = 4(49) + 3$

$= 196 + 3 = 199$ ✓

2) Solve

$$2^{(7-3x)} = \frac{1}{4}$$

$2^{(7-3x)} = 2^{-2}$

$7 - 3x = -2$

$-3x = -2 - 7$

$\frac{-3x}{-3} = \frac{-9}{-3}$

$x = 3$ ✓

END OF QUESTIONS

College Algebra - Test 1

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Name:.

GUST ID:. .....

Sunday 11th February, 2018

Notes: For full credit, please show your calculation methods. Calculators are **not** permitted.

Questions:

1) Find the domain and solve

$$\frac{x+1}{x} - \frac{2}{5} = \frac{2}{x}$$

$$= \frac{x+1(5)}{x(5)} - \frac{2(x)}{5(x)} = \frac{2(5)}{x(5)}$$

$$= (x+1)5 - 2(x) = 2(5)$$

$$= 5x+5 - 2x = 10$$

$$= 5x - 2x = 10 - 5$$

$$= \frac{3x}{3} = \frac{5}{3}$$

$$x = \frac{5}{3}$$

✓

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2) Solve and check your answer

Check

$\sqrt{(-3)^2-7} - (-3) = -1$

3×3

$\sqrt{9-7} - 3 = -1$

$2 - 3 = -1$

$-1 = -1$

good

$\sqrt{x^2-7} - x = -1$

$(\sqrt{x^2-7})^2 = (x-1)^2$ ✓

$x^2 - 7 = (x-1)(x-1)$

$x^2 - 7 = x^2 - x - x$ ⊖1 x

$x^2 - 7 = x^2 - 2x - 1$

$-7 + 1 = x^2 - x^2 - 2x$

$\frac{-6}{-2} = \frac{-2x}{-2}$

$\ominus 3 = x$

?

x

2 small mistakes

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3) Find the domains of the following functions:

(a)

$$f(x) = \frac{2x}{x^2 - 9} = 0$$

$(x-3)(x+3) = 0$

$x - 3 = 0$, $x + 3 = 0$

$x = 3$, $x = -3$

Domain $x = -3, 3$

$x \neq 3, -3$! 4/5

(b)

$$f(x) = \frac{10}{\sqrt{\frac{x}{3} + 2}}$$

Domain = $\frac{x}{3}$ X 0/5

4) Find the x and y intercepts of the following equation, and graph the equation. Write the intercepts on your graph.

$$10y + 30 = -5x$$

x-int
$y = 0$

$10(0) + 30 = -5x$

$\frac{30}{-5} = \frac{-5x}{-5}$

$-6 = x$

$(-6, 0)$ ✓

y-int
$x = 0$

$10y + 30 = -5(0)$

$\frac{10y}{10} = \frac{-30}{10}$

$y = -3$

$(0, -3)$ ✓

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5) Solve the inequality

$$-8 \quad -1 < 8 - 2x \leq 12 \quad -8$$

$$\frac{-9}{-2} < \frac{-2x}{-2} \leq \frac{-4}{-2}$$

$\frac{9}{2} > x \geq -2$ ✓

Simplify $\left\{\frac{-9}{-2}, -2\right\}$

Simplify

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$y - y_1 = m(x - x_1)$

6) Find the equation of the line passing through (-2,-3) which is perpendicular to $5y + x = 20$.

$5y + x = 20$

$\frac{5y}{5} = \frac{20}{5} - \frac{x}{5}$

$y = \frac{20}{5} - \frac{x}{5}$ → Slope = 5

$y - (-3) = 5(x - (-2))$

$y - 3 = 5(x + 2)$

$y - 3 = 5x - 10$

$y = 5x - 10 + 3$

$y = 5x - 7$ ← Final Ans

✓

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7) **BONUS** Find the domain of the function

$$f(x) = \sqrt{x + \sqrt{x}}$$

$x = 0$ ✗

END OF QUESTIONS

College Algebra - Quiz 2 (Section 3/4)

7/10

Name:

GUST ID:. .....

Tuesday 20th February, 2018

Notes: For full credit, please **show your calculation methods**. Calculators are **not** permitted.

Questions:

1) For the function

$$f(x) = \begin{cases} \frac{9}{x} & \text{if } 0 < x < 2 \\ 1 & \text{if } x = 2 \\ x + 4 & \text{if } x > 2 \end{cases}$$

Find $f(1), f(3)$ and $f(-2)$.

$f(1) = \frac{9}{1} = 9$ ✓

$f(3) = 1 = 1$ ×

$f(-2) = (-2) + 4 = 2$ ×

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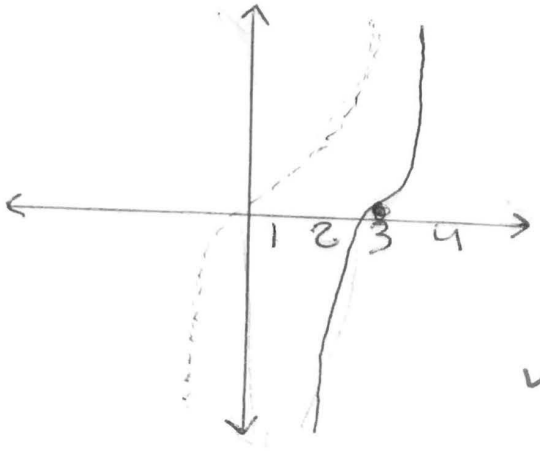
2) Use transformations to graph the function $y = (x-3)^3$.



Domain = $(-\infty, \infty)$

Range = $(-\infty, \infty)$

✓

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END OF QUESTIONS