

# Math 201 Quiz 2A

September 4, 2019

17

Name: ANSWERS

Instructions: No calculators. Use your own scrap. Write your fully simplified answers in the space provided.

1. Expand and simplify  $(\sqrt{x} + 3)^2 = \underline{x + 6\sqrt{x} + 9}$

2. Factor each expression.

(a)  $3x^4 + 10x^2 + 3 = \underline{(3x^2+1)(x^2+3)}$  (b)  $81a^4 - 16b^4 = \underline{(3a-2b)(3a+2b)(9a^2+4b^2)}$

(c)  $x^4 + 8x = \underline{x(x+2)(x^2-2x+4)}$

3. Complete the square:  $3x^2 + 6x + 7 = \underline{3(x+1)^2 + 4}$

4. Solve the inequality (Write your solution in interval notation):  $\frac{x+7}{2x+12} + \frac{6}{x^2-36} \leq 0$ .

Answer:  $x \in \underline{[5, 6)}$

5. If  $f(x) = \sqrt{x}$ , find, rationalize and simplify  $\frac{f(x+h)-f(x)}{h} = \underline{\frac{1}{\sqrt{x+h} + \sqrt{x}}}$

6. Find the domain. Write in interval notation:  $g(x) = \frac{\sqrt{3-x}}{\sqrt{1-x^2}}$  D:  $\underline{(-1, 1)}$

7. If  $f(x) = 2x^2 - x + 4$  and  $g(x) = 3x - 1$ , find and simplify  $f \circ g$   $\underline{18x^2 - 15x + 7}$

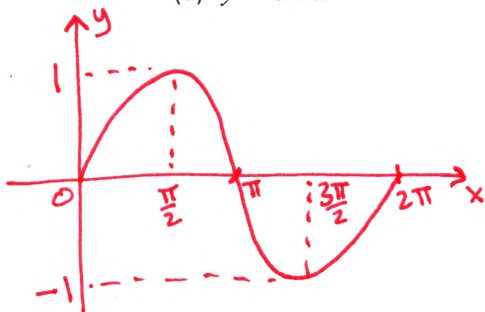
8. Find all values of  $x$  such that  $\cos 2x = \sin x$  for  $0 \leq x \leq 2\pi$ .  $x = \underline{\pi/6, 5\pi/6, 3\pi/2}$

9. Find the exact values.

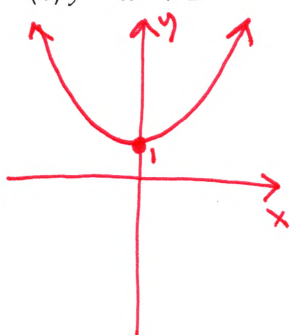
(a)  $\sec \frac{5\pi}{4} = \underline{-\sqrt{2}}$  (b)  $\cos \left(\frac{7\pi}{6}\right) = \underline{-\sqrt{3}/2}$  (c)  $\sin \frac{\pi}{3} = \underline{\sqrt{3}/2}$

10. Sketch the graphs of the given functions.

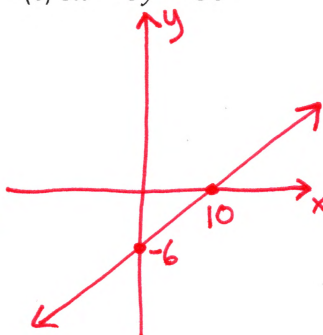
(a)  $y = \sin x$



(b)  $y = x^2 + 1$



(c)  $3x - 5y = 30$



(d)  $y = \sqrt{x-3}$

