17

Math 201 Quiz 2A

September 4, 2019

Name: ANSWERS

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

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

2. Factor each expression.

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

   (c) $x^4+8x =$ $x(x+2)(x^2-2x+4)$

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

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

   Answer: $x \in$ $[5,6)$

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

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

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

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

9. Find the exact values.

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

10. Sketch the graphs of the given functions.

    (a) $y=\sin x$ (b) $y=x^2+1$ (c) $3x-5y=30$ (d) $y=\sqrt{x-3}$