

Quiz 4 will cover the following material:

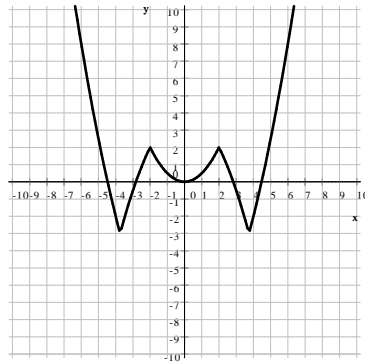
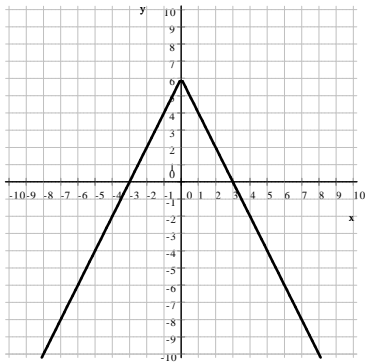
All material covered in Classes 1-4

Problems #1-29 from Are You Ready For Calculus?

The following Sample Quiz is intended to demonstrate the length of the quiz and the difficulty level of the questions. It is not intended as a comprehensive review or list of the type of questions that can appear on the quiz.

Sample Quiz 4

- Find the inverse for the function $f(x) = \frac{1}{3} \log_2(5x + 1)$
- The picture shows the graph of a function $y = f(x)$. Sketch the graph of the inverse relation, f^{-1} in the same coordinate system.



- Find the exact value of each of the following.
 - $\tan(300^\circ)$
 - $\cos(-45^\circ)$
 - $\sin\left(\frac{3\pi}{2}\right)$
 - $\sec(3\pi)$
- Solve the given equation over the real numbers. Use exact values.

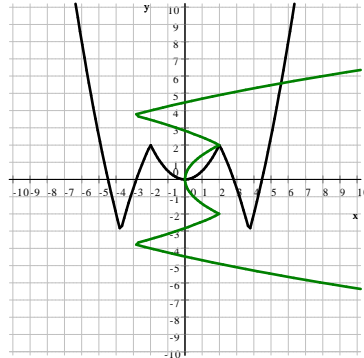
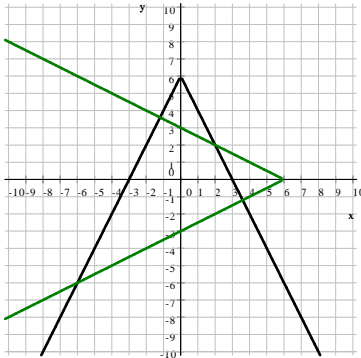
$$\sin x = 2 \cos^2 x - 1$$

- Give a complete analysis of the function $f(x) = \log_2 x$.
- A small object is moving along a vertical line. Its location is given by the function $L(t) = -t^3 + 4t$ where t is measured in seconds, L is measured in meters. Find the average velocity of the object between $t_1 = 1$ s and $t_2 = 4$ s.

Answers

$$1. f^{-1}(x) = \frac{-1 + 2^{3x}}{5} \text{ or } \frac{-1 + 8^x}{5}$$

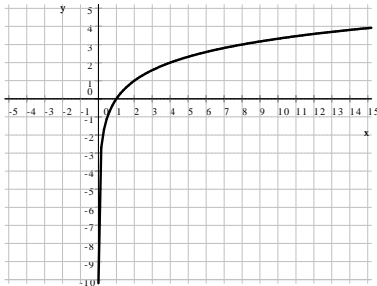
2.



$$3. \text{ a) } -\sqrt{3} \quad \text{ b) } \frac{\sqrt{2}}{2} \quad \text{ c) } -1 \quad \text{ d) } -1$$

$$4. -\frac{\pi}{2} + 2k\pi, \quad \frac{\pi}{6} + 2k\pi, \quad \frac{5\pi}{6} + 2k\pi \text{ where } k \in \mathbb{Z}$$

$$5. f(x) = \log_2 x$$

domain: $(0, \infty)$ range: \mathbb{R} x -intercept: $(1, 0)$ y -intercept: there is none

maximum, minimum: none

it is one-to-one

end-behavior:

 $\lim_{x \rightarrow -\infty} (\log_2 x) = \text{undefined}$ and $\lim_{x \rightarrow \infty} (\log_2 x) = \infty$

$$6. -17 \frac{\text{m}}{\text{s}}$$

Last revised: September 7, 2017