Exam 1 review

Feb 9, 2017
9:35 - 10:50 AM

Domain and range

For $f(x) = \sqrt{x^2 - 4}$ and $g(x) = \sqrt{3 - x}$, find the domain of $f(x) + g(x)$.

Domain and range

Find the domain and range of the following function:

Mathematical models

Make a linear model using the first and last data points:

Mascot height (in)	Running yards
38	200
59	390
70	280
82	420

Mathematical models

Make a linear model using linear regression, pre

Mascot height (in)	Running yards
38	200
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Function composition

For $f(x) = \sqrt{1-x}$ and $g(x) = \frac{x}{x+1}$ and $h(x) = x^2 + 1$, find and simplify

$$f(g(h(x))$$

Exponential growth/decay

A bacteria population grows by a factor of 15 every 20 minutes. If there are 1000 bacteria in the starting population, how many bacteria will there be in 2 hours?

Inverses, logs, and exponentials

Find $f^{-1}(x)$ for

$$f(x) = \ln(x+5) - \ln(x+2)$$

Tangent lines

For $f(x) = x^2 + x - 1$, estimate the slope of the graph at $x = 1$ by using intervals of length 1 and .1

Limits and continuity from graphs

Limits and continuity from graphs

Calculating limits

Find the limit

$$\lim_{x \to -3} \frac{\sqrt{x^2 - 5} - 2}{x + 3}$$

Calculating limits with infinity

Find the limit

$$\lim_{x \to 4^-} \frac{(x-3)(x+9)}{(x-2)(x-4)}$$

Calculating limits with infinity

Find the limit

$$\lim_{x \to \infty} \frac{(4x-1)(6x+1)}{(2x-1)(3x+11)}$$