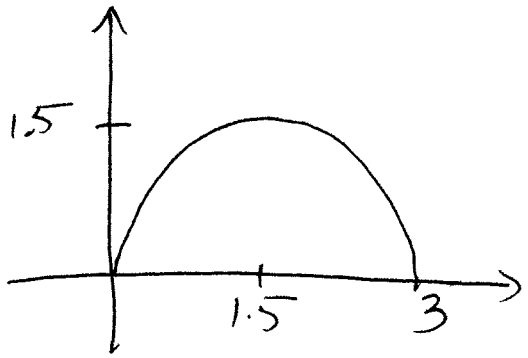
M171A Fall 2009 HW 2 Solutions

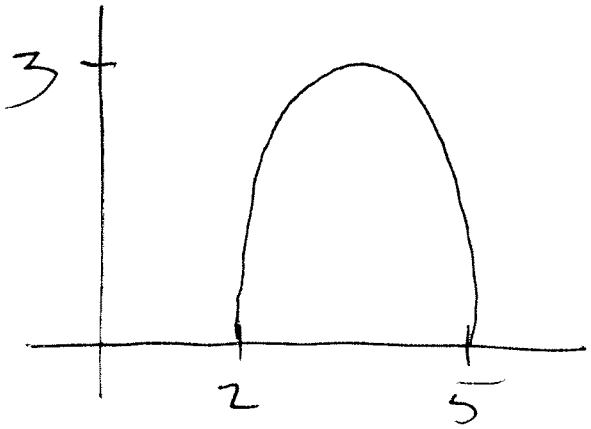
What got graded: §1.3 #6 42

§2.2 #24

(6) Graph of $y = \sqrt{3x - x^2}$:



Use it to create a function whose graph is



Solution: Translate to the right by 2, then stretch vertically by a factor of 2:

$$2f(x-2) = 2\sqrt{3(x-2) - (x-2)^2}.$$

(42) Express $F(x) = \sin(\sqrt{x})$ in the form $f \circ g$.

Soln: $f(x) = \sin x$, $g(x) = \sqrt{x}$.

Then $f \circ g(x) = \sin(\sqrt{x})$.

(24) Use a table to estimate the limit

$$\lim_{x \to 0} \frac{9^x - 5^x}{x}$$

guess $\approx .59$

Solution:

x	-0.1	-0.01	-0.001	0	0.001	0.01	0.1
$\frac{9^x - 5^x}{x}$	.4859	.5767	.5866	error	.5889	.5990	.7111