Math 116
Homework 06

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6.2

2. Sketch

(a) $y = -e^{-x}$

(b) $y = -2e^{-x}$

(c) $y = e^{-x} + 1$

(d) $y = 3 - e^x$

(e) $y = 2 - 3e^x$

6. Simplify

(a) $\left(e^{-x}\right)^2$

(b) $\sqrt{e^{2x}}$

(c) $\dfrac{e^x + 1}{e^{2x} - 1}$

7.1

2. Given the functions:
$f(x) = x^2 + 1$, $g(x) = \sin(x)$, $s(t) = 2t - 3$, find the following composition functions:

(a) $f(g(x))$

(b) $f(s(t))$

(c) $g(s(t))$

(d) $g(f(x))$

(e) $g(g(x))$

4. Suppose that $f(x) = x^3 + 4x$, $g(x) = \sqrt{x + 1}$, and $h(x) = \cos(x)$. Find:

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

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

7.4

In Exercises 2 and 6, find inverses, if they exist, of the given functions. If they do not exist, explain why.

2. $k(x) = \dfrac{x}{x+1}$

6. $f(w) = \dfrac{w^2}{w^2+1}$

8.2

6. Solve $\log_3(x-3) = 2$.

8. Solve $\log_9(x^2) = \dfrac{1}{2}$

8.3

6. Solve $\log_2(x^2) - \log_2(3x-8) = 2$

10. Solve $\log(x) - \log(x-1) - 1 = 0$

8.4

8. Solve $e^{x^2+4x-5} = 1$.

14. Solve $\ln(x) - \ln(\sqrt{x}) - \dfrac{1}{2} = 0$