

**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)  $(e^{-x})^2$

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

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

## 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.  $k(x) = \frac{x}{x+1}$

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

## 8.2

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

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

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*  $\ln(x) - \ln(\sqrt{x}) - \frac{1}{2} = 0$