

## Answers to Week 9

### • Section 4.3

1.  $4^2 = 16$

2. .

(a)  $-3$

(b)  $\frac{3}{2}$

(c)  $2$

3.  $4$

4.  $2 \log_b y + \frac{1}{2} \log_b z - \log_b x$

5.  $x = 0$

6.  $y = \frac{1}{\ln x}$

7.  $-\ln 2$

8.  $\frac{\ln(1.2)}{12 \ln(1.0025)} \approx 6.085$  years

### • Section 4.4

1. .

(a)  $\frac{1}{x}$

(b)  $\cot x$

(c)  $\frac{2x}{(x^2 + 4) \ln 3}$

(d)  $2x \ln(2 + 3x) + \frac{3x^2}{2 + 3x}$

(e)  $\frac{x^2 \sin^3 x}{\sqrt{1 + 2x}} \left( \frac{2}{x} + \frac{2 \cos x}{\sin x} - \frac{1}{1 + 2x} \right)$

2.  $a^x (\ln a)$

3.  $(1 + x)^{1/x} \left( \frac{\frac{x}{1+x} - \ln(1 + x)}{x^2} \right)$