

**MODULE 8****APPLICATIONS OF EXPONENTIALS  
AND LOGARITHMIC FUNCTIONS**

Name: \_\_\_\_\_ Points: \_\_\_\_\_

**Exercise 1.** Solve for  $x$ .

(a)  $2.7^{x+2} = 6.5^x$

(b)  $5^{x+3} = 9^{x+1}$

**Exercise 2.** A bacterial culture of 20g has been cultivated, which naturally increases at a rate of 3.5% per week.

(a) What will be the weight of the culture after 6 weeks?

(b) How long will it take until the culture has doubled in weight?

**Exercise 3.** A radioactive substance decays with a half-life of 4 hours. How long will it take until 34mg will have decayed to 10mg?

**Exercise 4.** A piece of wood has lost 12% of its carbon-14. How old is the wood?

**Exercise 5.** \$5,000 have been invested for 10 years at a rate of 4.2% with a monthly compounding. How much money will the investor receive at the end of the investment period?