Math 120
Practice Exam 6 (Review / Homework Compilation)
November 2025

Note: This packet is a collection of **old homework problems**, arranged to look like an exam. It is intended for practice and reflection — not as a prediction of upcoming exam content.

Name: _____
Student ID: _____
Section: _____

HONOR STATEMENT

"I have worked independently on this practice exam and used only permitted materials."

Signature: _____

You may use:

- One handwritten 8.5×11 notes sheet (front and back)
- TI-30X IIS calculator

Show work clearly. Answers may be exact or rounded to three decimals (unless specified).

GOOD LUCK — YOU'VE GOT THIS!

1. **Source: Chapter 12 Homework.**

   A ship embarked on a long voyage. At the start, there were **500 ants**. One week later, there were **900 ants**. Assume exponential growth.

   (b) How long did it take the ant population to **triple**? (Round to two decimals.)

   (d) At the start, there were **18 anteaters**, whose population doubles every **2.5 weeks**. How long into the voyage were there **200 ants per anteater**? (Round to one decimal.)

2. **Source: Chapter 14 Homework.**

   Find the linear-to-linear rational function whose graph has a horizontal asymptote of $y = 7$ and passes through the points $(0, 11)$ and $(4, 9)$.

   (a) Find $f(x)$.

   (b) State the vertical asymptote of $f(x)$.

3. (a) **Source: Chapter 8 Homework.**
Let $f(t) = 2t - 3$ and $h(t) = |t|$. Write the piecewise definition of $h(f(t))$.

(b) **Source: Chapter 9 Homework.**
Let $g(x) = \dfrac{5}{x+4}$. Find $g^{-1}(x)$ and state the domain of g^{-1}.

(c) **Source: Chapter 13 Homework**
Describe how the graph of $y = x^2$ is transformed to obtain

$$y = (3x - 2)^2 + 4.$$

4. **Source: Chapter 12 Homework.** Solve. (Round to four decimal places unless stated.)

   (i) $6^{5x} = 3$

   (ii) $\log_3(\ln x) = 2$

5. **Source: Chapter 16 Homework.**

   The rear sprocket has radius 3 inches and the front sprocket has radius r inches. You pedal at 1.5 rev/sec, and your forward speed is 13 mph. The wheel diameter is 25 inches.

   Find the radius r of the front sprocket (in inches). Round your answer to two decimals.