

HM3 EXTRA FINAL REVIEW

Name _____

- 1) Krystal invests \$7,018 in a retirement account with a fixed annual interest rate of 3% compounded 12 times per year. What will the account balance be after 18 years?
- 2) Rob invests \$7,254 in a savings account with a fixed annual interest rate of 4% compounded continuously. How long will it take for the account balance to reach \$11,723.00?
- 3) Mofor invests \$4,155 in a savings account with a fixed annual interest rate compounded 6 times per year. After 12 years, the balance reaches \$5,950.14. What is the interest rate of the account?
- 4) Jacob invests a sum of money in a savings account with a fixed annual interest rate of 5% compounded continuously. After 6 years, the balance reaches \$5,210.45. What was the amount of the initial investment?

Solve each equation.

5) $\left(\frac{1}{64}\right)^{-3p-3} = \frac{1}{8}$

6) $e^{2v} - 6 = 31.2$

7) $\log_{14}(n^2 + 52) = \log_{14}(-15n - 2)$

8) $\log_7 3 - \log_7(x + 4) = 2$

9) $10^{2a+5} + 6 = 81.8$

10) $\ln x + \ln(x + 4) = \ln 60$

Solve each equation. Remember to check for extraneous solutions.

11) $\frac{x+1}{2x^2} = \frac{1}{x^2} + \frac{1}{x}$

12) $\frac{12x-16}{x^2+2x-24} + \frac{1}{x-4} = \frac{1}{x+6}$

$$13) \frac{1}{k^2 - 9k + 18} - 1 = \frac{k - 1}{k^2 - 9k + 18}$$

Solve each equation for $0 \leq \theta < 2\pi$.

$$14) -2 = 2\tan \theta$$

$$15) 5 - \sin \theta = 6$$

Sketch the graph of each function. State the domain and range.

$$16) g(x) = \begin{cases} 4 - x^2, & x < 2 \\ \frac{1}{x-2}, & x \geq 2 \end{cases}$$

$$17) f(x) = \begin{cases} |x - 1|, & x < 0 \\ x^2 - 4, & x \geq 0 \end{cases}$$

Solve each inequality.

$$18) \frac{x-1}{x-2} \leq 0$$

$$19) \frac{x+38}{x-7} > -2$$

$$20) \frac{(x+2)(x-7)}{x-5} \leq 0$$

$$21) \frac{x-3}{x^2-12x+35} > 0$$

For each function, identify the holes and horizontal asymptote. Then sketch the graph.

$$22) f(x) = \frac{x^2 + x - 2}{x^2 - x}$$

$$23) f(x) = -\frac{2}{x^2 + x - 2}$$