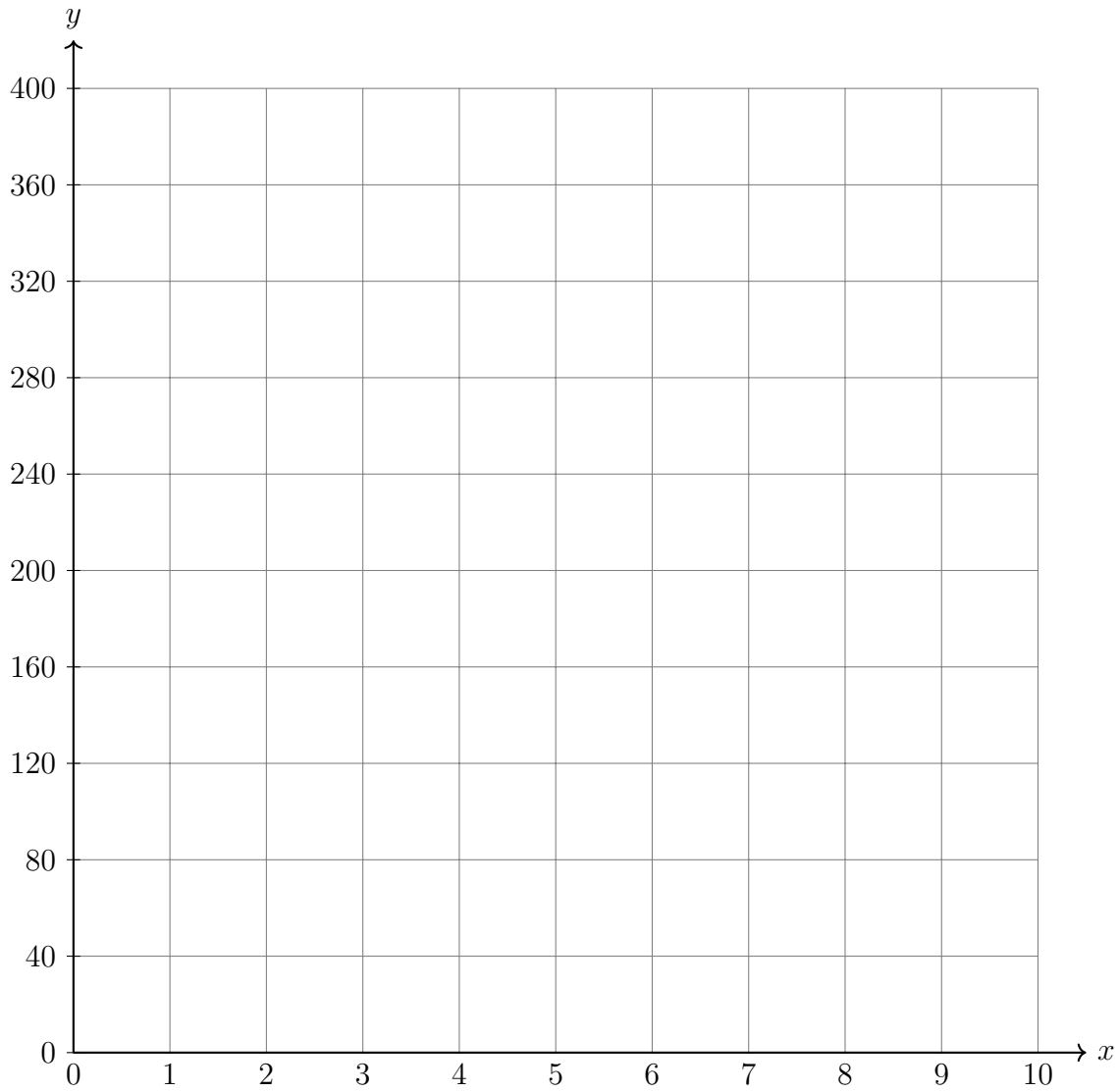
BECA/Huson/Algebra 2: Regents Preparation Name:
3 June 2024

Prep #22 Quiz: Graphing

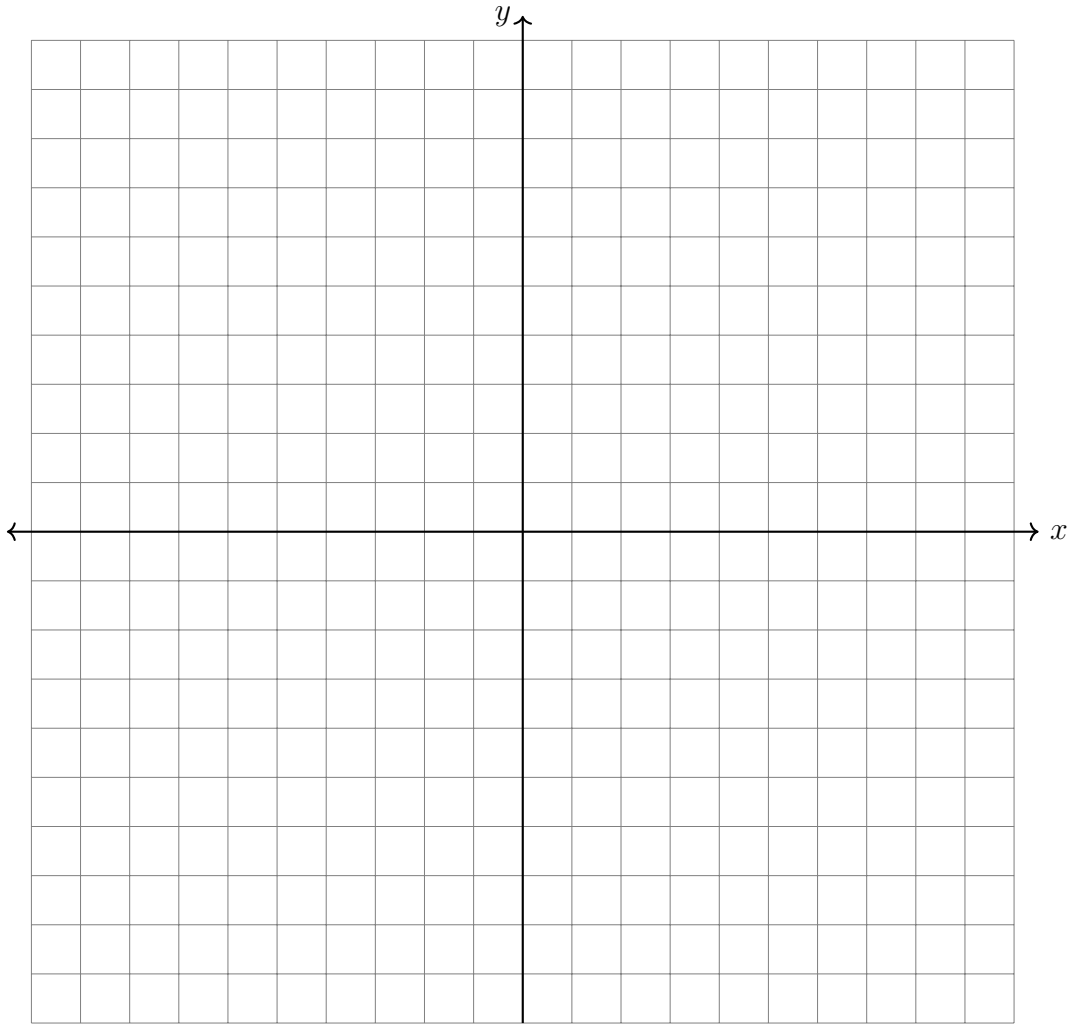
1. Graph $f(x) = 80(1.2)^x$ on the set of axes below.



(a) Draw a horizontal line at $y = 240$ and approximate the x-value where it intersects the curve.

(b) Using the calulator, find the x-value where $f(x) = 240$ to the *nearest hundredth.*

2. Graph the functions $f(x) = x^2 + x - 5$ and $g(x) = -x + 3$ on the set of axes below. Mark their intersections and label the points as ordered pairs.



Check your work:

- ☐ The parabola is drawn precisely and is a smooth curve.
- ☐ The line is drawn with a ruler and has the correct y-intercept.
- ☐ There are arrows on the ends of the lines if appropriate.
- ☐ The intersections are marked with points and labeled as ordered pairs. (parentheses)

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3. The probability that Gary and Jane have a child with blue eyes is 0.25, and the probability that they have a child with blond hair is 0.5. The probability that they have a child with both blue eyes and blond hair is 0.125. Make a table to represent the probabilities.

   Given this information, the events blue eyes and blond hair are (select all that apply).

   (a) dependent

   (b) independent

   (c) mutually exclusive

4. Factor and find the zeros of the polynomial equation.

$$P(x) = x^4 - 3x^3 - x - 3$$

5. Solve the system of equations.

$$\begin{aligned} x - 2y + 3z &= 9 \\ -x + 3y - z &= -6 \\ 2x - 5y + 5z &= 17 \end{aligned}$$

6. Given that $f(x) = 3|x| - 1$ and $g(x) = 0.03x^3 - x + 1$. Use a calculator to solve the equation $f(x) = g(x)$, rounding to the *nearest hundredth*.

7. Convert between radical and rational exponent forms. (assume $x > 0$)

   (a) $\dfrac{4\sqrt[3]{x^6}}{\sqrt{4x^2}} =$

   (b) $\dfrac{(25x)^{\frac{3}{2}}}{y^{-1}} =$

8. For $x \neq 0$, which expressions are equivalent to one divided by the sixth root of x?

   $$I.\frac{\sqrt[6]{x}}{\sqrt[3]{x}} \quad II.\frac{x^{\frac{1}{6}}}{x^{\frac{1}{3}}} \quad III.x^{-\frac{1}{6}}$$

   .

9. Simplify each complex expression to the form $a + bi$.

   (a) $i^3 =$

   (c) $(1 + 3i)^2 =$

   (b) $(1 + 5i)(2 - 4i) =$

   (d) $6xi^3(-4xi + 5)$