

1. Graph $f_1(x) = -16x^2 + 64x$. Find the maximum.

Analyze Graph > Maximum

Answer: (2, 64)

2. Same: find the positive zero (landing time).

Analyze Graph > Zero

Answer: $x = 4$

3. Graph $f_1(x) = x(20 - x)$. Find the vertex (max area).

Maximum

Answer: (10, 100)

4. Use a table (ctrl+T) to predict $f_1(7)$ for $f_1(x) = 3(2)^x$.

Read $x = 7$

Answer: 384

5. Graph $f_1(x) = 100(1.5)^x$ and $f_2(x) = 40x + 100$. Find where the exponential passes the line.

Intersection

Answer: about $x = 6$

6. A model $f_1(x) = -0.5x^2 + 4x + 10$. Find the max value.

Maximum

Answer: (4, 18)

7. Graph a linear fit $f_1(x) = 2x + 3$ with data point (5, 12). Read $f_1(5)$ and find the residual.

$f_1(5) = 13$; $12 - 13$

Answer: predicted 13; residual -1

8. Two models $f_1 = 5(2)^x$ and $f_2 = 3x + 50$. Use a table to find the first whole x where $f_1 > f_2$.

Compare columns until exp wins

Answer: $x = 5$ (160 vs 65)

9. Model $f_1(x) = -16x^2 + 80x + 6$. Find the max height and BOTH zeros; explain which zero is meaningful.

Max via Maximum; zeros via Zero

Negative time is not physical

Answer: max ~106; positive zero ~5.07 is landing

10. A savings model $f_1(x) = 200(1.08)^x$. Use the calculator to find the first whole year it exceeds \$400 (doubling).

Table until > 400

$1.08^x = 2$ near $x = 9$

Answer: year 10 (about \$431)