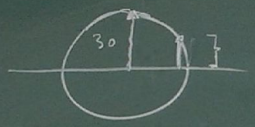
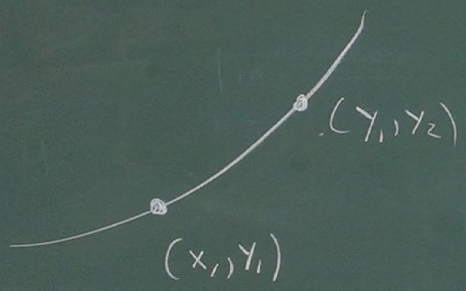


Is $y = mx^2 + b$ a str. line.



$$y_2 = mx_2^2 + b$$
$$y_1 = mx_1^2 + b$$

$$\text{Slope of graph} = \frac{y_2 - y_1}{x_2 - x_1}$$

$$= \frac{(mx_2^2 + b) - (mx_1^2 + b)}{x_2 - x_1}$$

$$= \frac{mx_2^2 + b - mx_1^2 - b}{x_2 - x_1}$$

$$= \frac{mx_2^2 - mx_1^2}{x_2 - x_1}$$

Slope of graph $= \dfrac{mx_2^2 - mx_1^2}{x_2 - x_1}$

$= \dfrac{m(x_2^2 - x_1^2)}{x_2 - x_1}$

$= \dfrac{m(x_2 - x_1)(x_2 + x_1)}{x_2 - x_1}$ } Valid

Slope of Graph $= m(x_2 + x_1)$

conclusion

The graph of $y = mx^2 + b$

is _____ a straight line

because ....

Prove

$x_2^2 - x_1^2 = (x_2 - x_1)(x_2 + x_1)$

Proof

$RHS = (x_2 - x_1)(x_2 + x_1)$

BLOB

$= (x_2 - x_1)x_2 + (x_2 - x_1)x_1$ Dist

$= x_2^2 - x_1x_2 + x_1x_2 - x_1^2$

$= x_2^2 - x_1^2$

$= LHS$

□

$= LHS$