Hello world

$$k_{n+1} = n^2 + k_n^2 - k_{n-1} \tag{1}$$

Khan Academy Question 2 Simplify the following for h

$$S = 2\pi r(r + h) \tag{2}$$

$$S/2\pi r = r + h \tag{3}$$

$$h = (S/2\pi r) - r \tag{4}$$

$$S = 250; r = 4; h = (S/2\pi r) - r; h = 5.94718394325 \tag{5}$$

Does the following have an x-intercept?

$$f(x) = x(x + 4) \tag{6}$$

What is the rough y-intercept of

$$[-3..3] f(x) = (x + 3)(1 - x) => \ 2.8$$

The y-intercept is the value at f(0) The x-intercept is the value where f(x) = 0 Periodic is a repeating or looping graph An even graph has f(x) = f(-x) or will look the same reflected over the y-axis An odd graph has -f(x) = f(-x) or will look mirrored over the x axis

What is the approximate maximum value of the formula:

$$max(-x^2 + 6x - 1) = \ 8 \tag{7}$$

1 New section

Solve for h

$$A = 1/2(b + c)h \tag{8}$$

$$A/(1/2(b + c)) = h \tag{9}$$

$$2A/(b + c) = h \tag{10}$$

To store a variable and solve, use “st” and “=”.

For example: I want to solve

$$E/c^2$$

I type it exactly, then type my value for E, type stE, type my value for c, and type stc

2 New section

What is the height of a trapezoid with one base equal to 20 m, the other base equal to 7m, and an area of 135m? It is 10m.

Solve

$$m = E/(c^2)$$

for

$$c = 300,000,000 m/s$$

and

$$E = 1.8e14 J$$

$$m = 2e - 3$$

3 New section

The Area of a trapezoid is

$$A = (1/2)(b + c)h$$

solve for b

$$A/(1/2)(h) = b + c$$
$$(A/(1/2)h) - c = b$$
$$b = 2A/h - c$$

When

$$A = 80 ft^2$$
$$h = 10 ft$$
$$c = 5 ft$$

$$b = 11$$

4 New section

Kinetic Energy object in motion

$$K = 1/2 m v^2$$

solve for velocity v

$$m = 800$$
$$K = 100000$$
$$sqrt(2K/m)$$
$$sqrt(2100000/800) = 15.8113883008$$

5 New section

Net income formula is

$$NI = (SP - VC)(V) - FC$$

solve for V where

$$NI = 5000$$

$$SP = 40$$

$$VC = 15$$

$$FC = 1000$$

$$NI + FC = (SP - VC)V$$

$$V = (NI + FC)/(SP - VC)$$

$$V = (NI + FC)/(SP - VC)$$

$$= 240$$

6 New section

What is the y-intercept or x(0) of

$$-(x - 1)(x + 3)$$

it should be

3

7 New section

What is the limit as x approaches 0?

$$\lim_{x \to 0} \frac{cos2x - cos3x}{x^2}$$

Appears to be 2.5 3.99631755994

8 Factoring

Use the quadratic formula:

$$(x + a)(x + b)$$

$$x^2 + xb + ax + ab$$

$$x^2 + (a + b)x + ab$$

To factor

$$x^2 + 10x + 9$$

$$a + b = 10$$

$$ab = 9$$

Factors of 9 are 1,3,9

$$1 + 9 = 10$$

$$1 * 9 = 9$$

So

$$(x + 1)(x + 9)$$

To factor

$$x^2 - 1$$

Use Sum of cubes:

$$a^3 + b^3$$

$$(a + b)(a^2 - ab + b^2)$$

Use Difference of cubes:

$$a^3 - b^3$$

$$(a - b)(a^2 + ab + b^2)$$

To solve a division:

$$\frac{x^3 - 8}{x - 2}$$

Power Rule:

$$f(x) = x^n$$

$$f'(x) = nx^{n-1}$$

9 Exponents

Add to combine when the terms multiply:

$$x^3 * x^4$$

$$x^{3+4}$$

$$x^7$$

Multiply when terms "compound"'

$$(x^3)^4$$

$$x^{3*4}$$

$$x^{12}$$

You can separate the terms:

$$(ab)^3 = a^3b^3$$

Negative exponents are the same as a fractional positive number:

$$a^{-3} == (1/a)^3$$