



Without using a calculator :)

1) Think about the square root of 32. Give me an approximation for it.

2) Think about $\sqrt[4]{2.5}$. Give an approximation for that.

Discuss with your neighbor how you determined these values.



2.2 Power Functions

$$f(x) = kx^a$$

k and a are non-zero constants

a power

k constant of variation/constant of proportionality

Ex.1

State the power and constant of variation for the graph of

a) $f(x) = \sqrt[3]{x}$ b) $h(x) = \frac{5}{x^2}$

TRY

State the power and constant of variation for the graph of

(a) $\frac{1}{x^6}$

(b) $\frac{1}{2^4\sqrt{x}}$

(c) $-\frac{2}{3}\sqrt[7]{x^3}$



Applications of Variation

Ex. 2

Write an equation for the area, A , of a triangle varies directly as the square of its side, s .

Ex. 3

The current, I , in an electrical circuit varies directly with its voltage, V , and indirectly with its resistance, R .



Graphing Power Functions

Explore

With your group and using your calculator compare

$$y=x^2, y=x^4, y=x^6, y=x^{14}, y=x^3, y=x^5, y=x^7, y=x^{21}$$

When the exponent is an integer, even and greater than one

When the exponent is an integer, odd and greater than one



Graphing Power Functions

Explore

With your group and using your calculator compare

$$y=x^{1/2}, y=x^{1/4}, y=x^{1/6}, y=x^{1/3}, y=x^{1/5}, y=x^{1/7}$$

When the exponent is a fraction, even and less than one

When the exponent is a fraction, odd and less than one



If the index outside the radical is even are you allowed negatives values? What if the index is odd?

Ex.2

State the values of the constants a and k. Sketch the graph by hand, using a table of values if necessary. It might also help to think about the domains.

a) $f(x) = \sqrt[3]{x}$

b) $g(x) = \sqrt[3]{x^2}$



Powers >1

Ex. 3

State the values of the constants a and k. Sketch the graph by hand, using a table of values if necessary.

a) $f(x) = \sqrt[4]{x^5}$

b) $f(x) = \sqrt[3]{x^4}$



Fractional Functions

Ex. 4

State the values of the constants a and k . Sketch the graph by hand, using a table of values if necessary.

a) $f(x) = 1/(x^{4/5})$

b) $f(x) = 1/(x^{3/7})$