

1) Exponents and roots

$$A) \frac{3^{x+1}}{3} = 3^x$$

$$E) x^{\frac{3}{2}} = 2\sqrt{2}$$

$$B) (3^2)^x = 27 \quad x = \frac{3}{2}$$

$$x = 2$$

$$C) (2^x)^3 = 8\sqrt{2} \quad x = \frac{7}{6}$$

$$F) (xy)^3(xy)^{-3} = 1$$

$$D) \frac{36}{6^{x-2}} = 6^{2-(x-2)} \\ 6^{4-x}$$

1) Exponents and roots (cont)

6) $\sqrt{-1-b} = -2q$

Which of the following statements could be true?

- I. $b > 0$
- II. $b = 0$
- III. $b < 0$

H) the arithmetic mean of 10 , \sqrt{x} , and -1 is 7 .

What is $\frac{x}{16}$? $\frac{10 + \sqrt{x} - 1}{3} = 7 \Rightarrow x = 144$

⑨

1) (even more) Exponents and roots

I) $\sqrt{x-8} = \sqrt{x} - 2$ $x=?$ 9
 $x-8 = x - 4\sqrt{x} + 4$
 $\sqrt{x} = 3$

J) If $a > 0$ and $a^{\frac{b+3}{4}} = 8$ then $a^{\frac{b+3}{3}} = ?$ 16
 $(a^{\frac{b+3}{4}})^{\frac{4}{3}} = 8^{\frac{4}{3}}$

k) $7^{10-x} = 49$ $x-10=?$ -2
 $10-x=2$

1) (Wow! still more) Exponents and roots

L) $(q^{x_3})^3 = \frac{1}{q^3}$ what is $-3x = ?$ 3
 $q^x = q^{-1}$

M) If $f(x) = x^{-2}$, then when $x=3$,
 $(f(x))^{-1} = ?$
 $(\frac{1}{9})^{-1} = 9$

2) simplifying roots

A) $\sqrt{72} = 6\sqrt{2}$

B) $\sqrt{96} = 4\sqrt{6}$

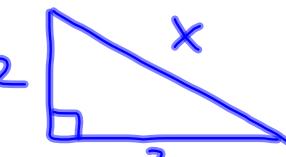
C) $\sqrt{56} = 2\sqrt{14}$

D) $\sqrt{8} = 2\sqrt{2}$

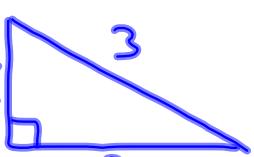
E) $\sqrt[3]{54} = 3\sqrt[3]{2}$

F) $\sqrt[4]{32} = 2\sqrt[4]{2}$

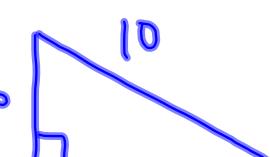
3) Right Triangles

A)  A right triangle with legs of length 2 and 3, and a hypotenuse of length x . The right angle is at the bottom-left vertex.

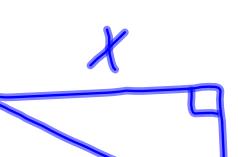
$$x = \sqrt{13}$$

C)  A right triangle with legs of length x and 2, and a hypotenuse of length 3. The right angle is at the top-left vertex.

$$x = \sqrt{5}$$

B)  A right triangle with legs of length 6 and x , and a hypotenuse of length 10. The right angle is at the bottom-left vertex.

$$x = 8$$

D)  A right triangle with legs of length x and 5, and a hypotenuse of length 12. The right angle is at the top-right vertex.

$$x = \sqrt{119}$$

4) functions

A) $f(x)=3x^2+2x-6$

$$f(2)= 10 \quad f(-2)= 2$$

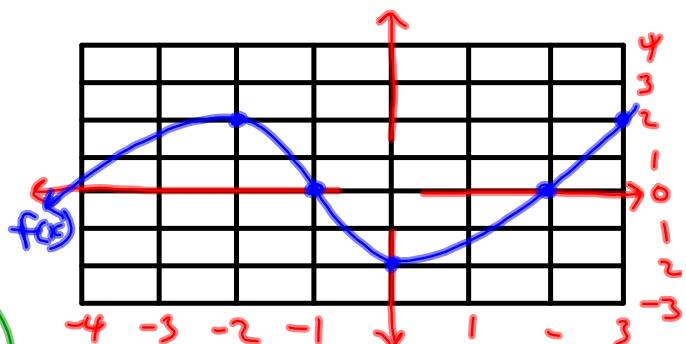
B) $f(x)=x/(2+x^2)$

$$f(2)= \frac{1}{3} \quad f(-2)= -\frac{1}{3}$$

5) More Functions

A) for any $a > b$, on what intervals must $f(a) > f(b)$?

$$(-\infty, -2) \text{ and } (0, \infty)$$



B) $f(2) = 0$

C) $f(-2) = 2$

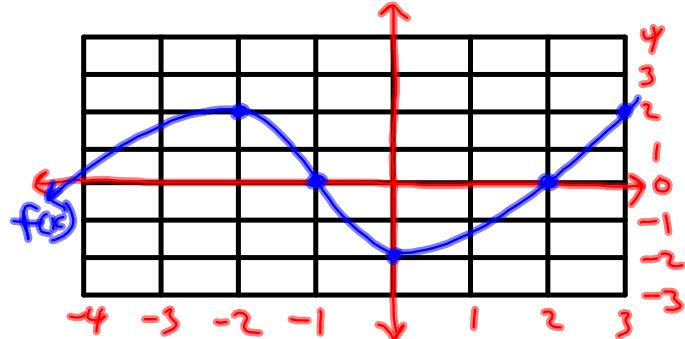
D) $f(0) = -2$

E) $f(x) = 0 \quad x = -1, 2, -4$

5F) same graph for $f(x)$

if $g(x) = f(2x+1)$ find $g(1) = ?$

$$\begin{aligned} g(1) &= f(2(1)+1) \\ &= f(3) \\ &= 2 \end{aligned}$$



6) Factoring

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

b) $(16 - x^2) = (4+x)(4-x)$

c) $(y^2 - 49) = (y+7)(y-7)$

d) $(4x^2 - 9y^2) = (2x+3y)(2x-3y)$

e) $(x^2 + 4y^2)$ = not factorable

f) $(x^2 + 7x + 10) = (x+2)(x+5)$

g) $(x^2 - 9x + 18) = (x-6)(x-3)$

h) $(x^2 - x - 12) = (x-4)(x+3)$