Solving Radical Equations (2.3)

p96 day 5

Enneagram 1

Perfectionist
Very ethical

Core longing: being good
Core fear: being corrupt
Deadly sin: anger/resentment

Inner critic
Critical of others

Dishwasher

Utterly dependable
Self discipline
Rule followers

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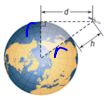
HW: p86#12, 14, 17ab

12. For relatively small heights above Earth, a simple radical function can be used to approximate the distance to the horizon.



a) If Earth's radius is assumed to be 6378 km, determine the equation for the distance, d, in kilometres, to the horizon for an object that is at a height of h kilometres above Earth's surface.

b) Identify the domain and range of the function.

c) How can you use a graph of the function to find the distance to the horizon for a satellite that is 800 km above Earth's surface?

d) If the function from part a) were just an arbitrary mathematical function rather than in this context, would the domain or range be any different? Explain.

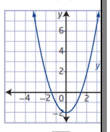
$r^2+d^2=(r+h)^2$

$d^2=r^2+2rh+h^2-r^2$

$d=\sqrt{h^2+2rh}$

$d=\sqrt{h^2+12756h}$

17. Given the graph of t
sketch the graph of



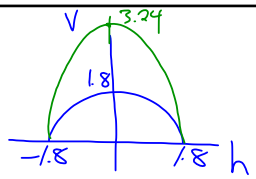
a) $y=2\sqrt{f(x)}-3$
b) $y=-\sqrt{2f(x-3)}$
c) $y=\sqrt{-f(2x)}+3$
d) $y=\sqrt{2f(-x)}-3$

14. The main portion of an iglu (Inuit spelling of the English word igloo) is approximately hemispherical in shape.

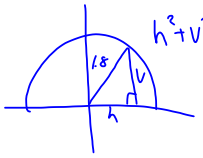
a) For an iglu with diameter 3.6 m, determine a function that gives the vertical height, v, in metres, in terms of the horizontal distance, h, in metres, from the centre.

b) What are the domain and range of this function, and how are they related to the situation?

c) What is the height of this iglu at a point 1 m in from the bottom edge of the wall?



$V=\sqrt{-h^2+3.24}$



$h^2+v^2=1.8^2$

Solving Radical Equations (2.3)

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ex1: solve $\sqrt{3x-5}^2=(x-5)^2$ $(x-5)(x-5)$

$3x-5=x^2-10x+25$

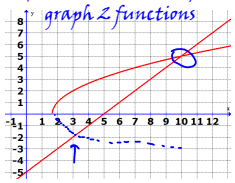
$0=x^2-13x+30$

$0=(x-3)(x-10)$

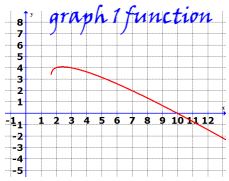
$x-3=0$ $x-10=0$

check $x=3$ $x=10$

graph 2 functions



graph 1 function



Solving Radical Equations (2.3)

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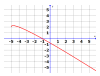
ex2: Solve $\sqrt{x+5}=x+3$



$x+5=x^2+6x+9$

$0=x^2+5x+4$

$0=(x+4)(x+1)$

$x=-4$ $x=-1$

inadmissible

Solving Radical Equations (2.3)

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ex3: solve $\sqrt{3x^2-5}=x+4$ to 1 decimal place

$3x^2-5=x^2+8x+16$

$2x^2-8x-21=0$

$x=\frac{8\pm\sqrt{64-4(2)(-21)}}{2(2)}$

$=\frac{8\pm\sqrt{64+168}}{4}$

$x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$

$x=5.8$ $x=-1.8$

7c

Solving Radical Equations (2.3) p96 day 5

ex4: The velocity of a roller-coaster car after a vertical drop is modelled by $v = \sqrt{(v_o)^2 + 2ad}$ where
v_o is the initial velocity
a is the acceleration
d is the vertical drop

If the max allowed velocity is 120 fps, the initial velocity is 10 fps and the acceleration due to gravity is 32 fps^2, what is the max allowable drop?

$d = ?$

$120 = \sqrt{10^2 + 2(32)d}$

$14400 = 100 + 64d$

$223 = d$

$\therefore$ max drop is 223 ft

11

period

$T = 2\pi\sqrt{\frac{L}{9}}$

$2 = 2\pi\sqrt{\frac{L}{9.8}}$

$0.318 = \sqrt{\frac{L}{9.8}}$

Solving Radical Equations (2.3) p96 day 5

HW: p96 #6ac, 8ac, 10

$2x^2 + 11x + 12$

$= 2x^2 + 8x + 3x + 12$

$= 2x(x+4) + 3(x+4)$

$= (x+4)(2x+3)$

may 9 11 & 3

Attachments

quiz2.pdf