Radical : Practice Test

MC: 1. c 8. b
2. b 9. b
3. a 10 a
4. d 11. a
5. c 12 c
6. d 13. d
7. b

Part B

1 a) $\sqrt{80}$
b) $\sqrt{225x^5}$
c) $\sqrt[3]{448}$

2. a) $180\sqrt{10}$
b) $35x^6\sqrt{6x}$
c) $8x^3y^3\sqrt{6y^2}$
d) $60\sqrt{3}-6\sqrt{2}$

3. $x \leq 2/11$

4. $16-9x^3-24x^2\sqrt{x}$

5. a) $\frac{5}{3}\sqrt{15}$
b) $\frac{24-15\sqrt{2}}{7}$

6. a) $x=10$
b) $x=9$
$x=5.25$ extraneous

Quadratics: Practice Test

MC

1. d	7. a	13. a
2. d	8. b	14. c
3. c	9. a	15. a
4. c	10. a	16. c
5. b	11. c	17. d
6. b	12. b	

Part B:

1. $y = 12x^2 - 60x + 30$; $y = 12(x-2.5)^2 - 45$

a) vertex (2.5, -45)
axis of sym: $x = 2.5$
y-int: 30
range: $y \geq -45$

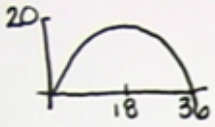
b) min value of -45

2. $y = -\frac{13}{5}(x+7)^2 + 23$

3. $C = -0.0002t^2 + 0.06t + 10$; $C = -0.0002(t-150)^2 + 14.5$

a) max is 14.5 ug/L at 150 min

b) at 120 min $C = 14.32$ ug/L

4. 

a) $h = -\frac{20}{324}(x-18)^2 + 20$

b) at $x = 10$ $h = 16.04$ ft high
$\therefore$ $16.04 - 6 = 10.04$ ft above

5. $y + 7x = 5600$
$y = -7x + 5600$
Area $= x \cdot y$
$= x(-7x + 5600)$
$A = -7x^2 + 5600x$
complete the sq $A = -7(x-400)^2 + 1120000$
$x = 400$; $y = 2800$

6. \$170 for 86 purses
$170 + 10x$ price inc.
$86 - 2x$ # sold dec.

Profit $= (170+10x)(86-2x)$
$= -20x^2 + 520x + 14620$
$= -20(x-13)^2 + 18000$

new price $170 + 10(13)$
$= 300$ dollars

new # sold $86 - 2(13)$
$= 60$ sold

7. a) $11x^2(x-3)(x+3)$

b) $(x-14)(x+9)$

c) $(4x-5)(2x-3)$

8. $8x^2-11\cdot 5x-4x^2-9$

$12x^2-5x-2=0$

factor

$(4x+1)(3x-2)=0$

$x=-1/4,\ 2/3$

Quad. Eq

$\frac{5\pm\sqrt{121}}{24}$

$\frac{5\pm 11}{24}$ $\frac{16}{24}=\frac{2}{3}$ $\frac{-6}{24}=-\frac{1}{4}$

9. $y=4x^2-18x+9$

$\frac{18\pm\sqrt{180}}{8}$

$\frac{18\pm 6\sqrt{5}}{8}$

$\frac{9\pm 3\sqrt{5}}{4}$

10. a) $A=6.28(8)^2+72.24(8)$

$=979.84\ cm^2$

b) $1253.05=6.28r^2+72.24r$

$0=6.28r^2+72.24r-1253.05$

$\frac{-72.24\pm\sqrt{36695.23}}{12.56}$

9.5 cm

-21 inadmissible

11. $h = -6t^2 + 84t + 41.3$

a) 41.3 ft

b) $0 = -6t^2 + 84t + 41.3$

$$\frac{-84 \pm \sqrt{8047.2}}{-12}$$

-0.48 sec inadmissible

14.48 sec

c) $h = -6(t-7)^2 + 335.3$

max = 335.3 ft

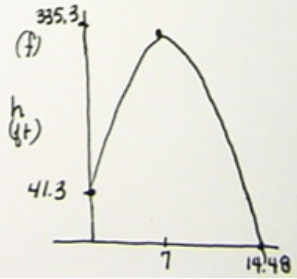
reached at 7 sec

c) $80 = -6t^2 + 84t + 41.3$

$0 = -6t^2 + 84t - 38.7$

$$\frac{-84 \pm \sqrt{6127.2}}{-12}$$

~~-8~~ 0.48 sec 13.5 sec



12. $(5x-2)(2x+3)=117$

$10x^2+11x-6=117$

$10x^2+11x-123=0$

$\frac{-11 \pm \sqrt{5041}}{20}$ → 3, -4.1

13. x

a) $x+1$

$x(x+1)=3(x+1)+5$

$x^2+x=3x+3+5$

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

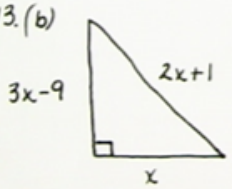
$(x-4)(x+2)=0$

$x=4, -2$

#'s Are

x	4	OR	-2
$x+1$	5		-1

13. (b)



$(2x+1)^2=x^2+(3x-9)^2$

$4x^2+4x+1=x^2+9x^2-54x+81$

$4x^2+4x+1=10x^2-54x+81$

$0=6x^2-58x+80$

$\frac{58 \pm \sqrt{1444}}{12}$

$\frac{58 \pm 38}{12}$ → 8, $\frac{20}{12}=\frac{5}{3}$

Shorter leg:

8cm

OR $\frac{5}{3}$cm (inadmissible)

13. c) x

$x+1$

$x+2$

$x^2+(x+1)^2+(x+2)^2=60x+5$

$x^2+x^2+2x+1+x^2+4x+4=60x+5$

$3x^2-54x=0$

$3x(x-18)=0$

$x=0, 18$

#'s

0	18
1	19
2	20

Systems of Equations: Practice Test

mc

1. D
2. C
3. C
4. B
5. B

1. $\frac{y}{6}+\frac{x^2}{2}+\frac{x}{12}=\frac{2}{3}$ and $3y+x-12=0$

$2y+6x^2+x=8$ $\quad 3y=-x+12$

$2y=-6x^2-x+8$ $\quad y=-\frac{x}{3}+4$

$y=-3x^2-\frac{x}{2}+4$

Set =: $-3x^2-\frac{x}{2}+4=-\frac{x}{3}+4$ (multiply by 6)

$-18x^2-3x+24=-2x+24$

$-18x^2-x=0$

$-x(18x+1)=0$

$x=0, -\frac{1}{18}$

→ sub to get y

$x=0 \quad y=-\frac{0}{3}+4$

$=4$

$x=-\frac{1}{18} \quad y=+\frac{1/18}{3}+4$

$=\frac{217}{54}$

2. $y=-16t^2+177t+4$; $y=65t+100$

$-16t^2+177t+4=65t+100$

$0=16t^2-112t+96$

$0=16(t^2-7t+6)$

$0=16(t-6)(t-1)$

$t=6, 1$

$y=65t+100$

$y=65(6)+100$

$=490 \quad (6,490)$

$y=65(1)+100$

$=165 \quad (1,165)$

3. $y = -6x^2 - 370x + 100900$; $y = 500x - 83024$

$-6x^2 - 370x + 100900 = 500x - 83024$

$0 = 6x^2 + 870x - 183924$

$\frac{-870 \pm \sqrt{5171076}}{12}$ → 117, −262

yes

$y = 500x - 83024$

$x = 117$ $y = -24524$

$x = -262$ $y = -214024$

5. $y = x^2 - 6x + 8$ and $y = \frac{1}{2}x - 6$

$y = (x-3)^2 - 1$

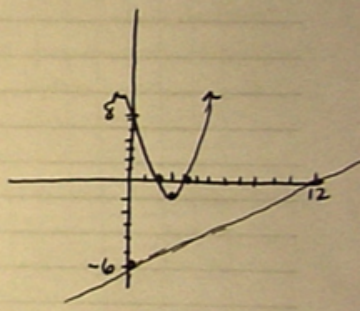
vertex $(3, -1)$

x-int 4 and 2

y-int 8

x-int 12

y-int −6



pt(s) of intersection

$x^2 - 6x + 8 = \frac{1}{2}x - 6$

$2x^2 - 12x + 16 = x - 12$

$2x^2 - 13x + 28 = 0$

$\frac{13 \pm \sqrt{-55}}{4}$ no soln

no pts of intersection

6. $y - 3x^2 - 12x = 6$

$y = 3x^2 + 12x + 6$

$y = 3(x+2)^2 - 6$

vertex $(-2, -6)$

x-int: -0.59 & -3.41

y-int 6

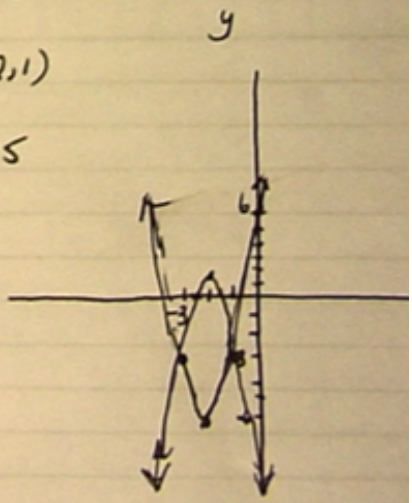
$y = -4x^2 - 16x - 15$

$y = -4(x+2)^2 + 1$

vertex $(-2, 1)$

x-int

y-int -15



$3x^2 + 12x + 6 = -4x^2 - 16x - 15$

$7x^2 + 28x + 21 = 0$

$7(x^2 + 4x + 3) = 0$

$7(x+3)(x+1) = 0$

$x = -3 \quad y = 0$

$x = -1 \quad y = 0$

Rational Expressions/Eq : Practice Test

MC

1.	C	4.	B
2.	D	5.	D
3.	B	6.	A

Pt. B

1. a) $\frac{2x^2+x-1}{6x^2-x-2} \times \frac{2x^2+3x+1}{2x^2+5x-3} \div \frac{x^2+2x+1}{x+3}$

$\frac{(2x-1)(x+1)}{(3x-2)(2x+1)} \times \frac{(2x+1)(x+1)}{(2x-1)(x+3)} \times \frac{x+3}{(x+1)(x+1)}$

$= \frac{1}{3x-2}$ $x \neq \frac{2}{3}, -\frac{1}{2}, -3, -1$

1. (b) $\frac{x}{x^2-3x-4} - \frac{4}{x+1}$

$\frac{x}{(x-4)(x+1)} - \frac{4}{x+1}$

$\frac{x}{(x-4)(x+1)} - \frac{4(x-4)}{(x-4)(x+1)}$

$\frac{x-4(x-4)}{(x-4)(x+1)}$

$\frac{x-4x+16}{(x-4)(x+1)}$

$\frac{-3x+16}{(x-4)(x+1)}$ $x \neq 4, -1$

1. (c) $\frac{5}{x^2-1} - \frac{2}{x^2+4x+3} + \frac{3}{x^2+2x-3}$

$\frac{5}{(x-1)(x+1)} - \frac{2}{(x+3)(x+1)} + \frac{3}{(x+3)(x-1)}$

$\frac{5(x+3)}{(x-1)(x+1)(x+3)} - \frac{2(x-1)}{(x-1)(x+1)(x+3)} + \frac{3(x+1)}{(x-1)(x+1)(x+3)}$

$\frac{5(x+3)-2(x-1)+3(x+1)}{(x-1)(x+1)(x+3)}$

$\frac{5x+15-2x+2+3x+3}{(x-1)(x+1)(x+3)}$

$\frac{6x+20}{(x-1)(x+1)(x+3)}$ $x \neq 1, -1, -3$

$\frac{2(3x+10)}{(x-1)(x+1)(x+3)}$

2. a. $x=3, -1$

   b. $x = \frac{6 \pm \sqrt{44}}{2}$

   $= 3 \pm \sqrt{11}$

   c. $m = -4$, $m = -1$ inadmissible

3. omit

4. 10km/h first 5 km , 8km/h last 4km

Trigonmentry: Practice Test

1. b
2. b
3. no #3
4. b
5. c
6. d
7. $\frac{-4}{\sqrt{17}}$
8.
9.

1. a) 227°
   b) −393°
   c) 829°

2. a) 2
   b) 3
   c) 3

3. a) $\sin\theta = \frac{-18}{\sqrt{388}} = \frac{-18}{2\sqrt{97}} = \frac{-9}{\sqrt{97}}$ $\cos\theta = \frac{8}{2\sqrt{97}} = \frac{4}{\sqrt{97}}$
   b) $\sin\theta = \frac{-13}{\sqrt{250}} = \frac{-13}{5\sqrt{10}}$ $\cos\theta = \frac{-9}{5\sqrt{10}}$

c) 75°
d) 61°
e) +35°
f) 230° is in Q.3, $\tan\theta = \frac{-}{-} = +$

4. a) 79°, 259°
   b) 28°, 152°
   c) 155°, 205°

5. a) $\frac{1}{\sqrt{3}}$
   b) $\frac{1}{2}$
   c) $\frac{1}{\sqrt{2}}$
   d) 1

6. a) $x = 8.4$
   b) $x = 41.8$
   c) $\theta = 68.7°$
   d) $x = 9.39$, $y = 10.12$