

**MAT 1175 – COURSE REVIEW #2**

1. a) **Divide and simplify:**  $\frac{x^2 - 9}{x^2 + 6x - 7} \div \frac{x^2 - x - 6}{3x + 21}$       b) **Divide by long division:**  $\frac{3y^2 - 4y + 3}{y - 2}$

2. a) **Combine into one fraction:**  $\frac{2x}{x - 3} - \frac{3}{4}$       b) **Solve for y:**  $\frac{y + 2}{4y} - \frac{1}{2} = \frac{y - 9}{10y}$

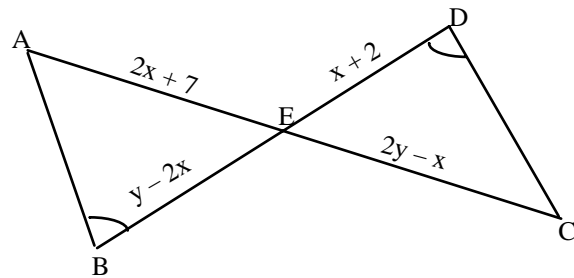
3. a) **Simplify and combine:**  $3\sqrt{32x^3} - x\sqrt{18x}$       b) **Rationalize and simplify:**  $3\sqrt{\frac{x^2}{6}}$

4. **Solve the following system graphically:**  
 $2x - y = 5$   
 $x + y = 4$

5. **Solve for x using the quadratic formula.** Leave the answer in the simplest radical form.  
 $x^2 - 10x + 7 = 0$

6. a) **Simplify:**  $\frac{8}{3 - \sqrt{5}}$       b) Find the **product:**  $(x - \sqrt{3})(x - \sqrt{3})$

7. If  $\angle B = \angle D$  and  $AE = EC$   
 a) **Show that**  $\triangle ABE \cong \triangle CDE$   
 b) **Solve for x and y**  
 c) **Find the lengths of AC and BD**



8. a) **Solve for x:**  $\sqrt{x+1} + 5 = x$

b) **Simplify:**  $\frac{(3x^3)^2}{5x^{-3}}$

c) **Simplify:**  $\frac{4x^{-3}y^{-3}}{6xy^{-5}}$

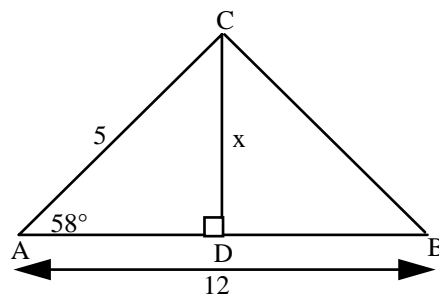
9. If  $AC = 5$ ,  $AB = 12$ , and  $\angle A = 58^\circ$ ,  
 a) **Find x** (round to the nearest tenth).

$\sin 58^\circ = .8480$

$\cos 58^\circ = .5299$

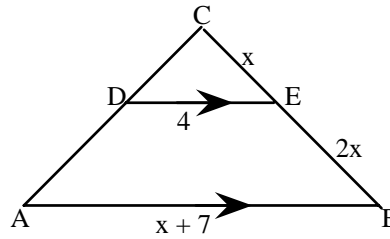
$\tan 58^\circ = 1.6003$

- b) **Find the area** of  $\triangle ABC$  (round to the nearest tenth).

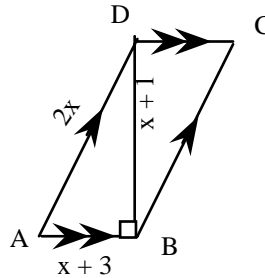


**MAT 1175 Course Review 2 (Page 2)**

10. If DE is parallel to AB,  
 a) **Show** that  $\triangle ACB$  and  $\triangle DCE$  are similar (give reasons)  
 b) **Solve** for  $x$ , CE, CB, and AB

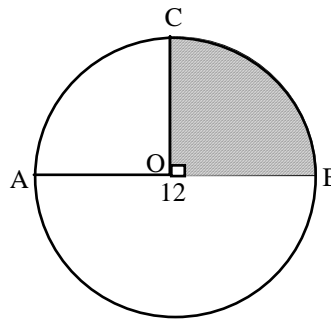


11. If ABCD is a parallelogram and  $\angle DBA$  is  $90^\circ$ ,  
 a) **Solve** for  $x$ , AB, DB, and AD.  
 b) **Find** the area of the parallelogram ABCD.



12. Given  $\triangle ABC$  with  $AC = \frac{3x}{2} - 3y$ ,  $AB = 2x - y$  and  $\triangle DEF$  with  $DE = 6y + 2$  and  $DF = \frac{5x}{4} - 2y$ .  
 If  $\angle B = \angle E$  and  $\angle C = \angle F$  and  $EF = BC$ , state **why** the triangles are **congruent** and **find**  $x$  and  $y$ .

13. If the diameter  $AOB = 12$  and  $\angle COB = 90^\circ$   
 a) **Find** the **circumference** of the **circle** (round to the nearest tenth).  
 b) **Find** the **area** of the **shaded sector** (round to the nearest tenth).

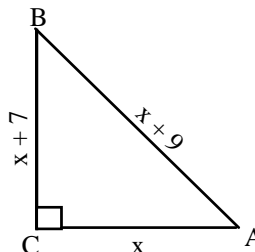


14. **Simplify:**  $\frac{6x^2 - 7x - 3}{3x + 1}$

15. a) **Combine:**  $5\sqrt{12} + 7\sqrt{27}$

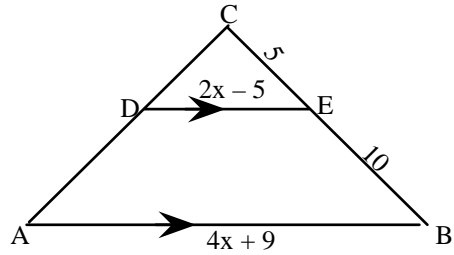
b) **Find the product & simplify:**  $(5\sqrt{2})(3 - \sqrt{6})$

16. In the right triangle  $\triangle ABC$ ,  $\angle C = 90^\circ$ ,  $AC = x$ ,  $BC = x + 7$ ,  $AB = x + 9$   
 a) **Find**  $x$   
 b) **Find** all **three sides** of  $\triangle ABC$   
 c) **Find** the **area** of  $\triangle ABC$

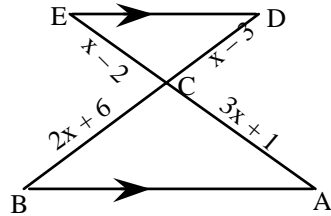


**MAT 1175 Course Review 2 (Page 3)**

**17.** If  $ED \parallel AB$ , find  $x$ .



**18.** If  $DE \parallel AB$ , solve for  $x$ .

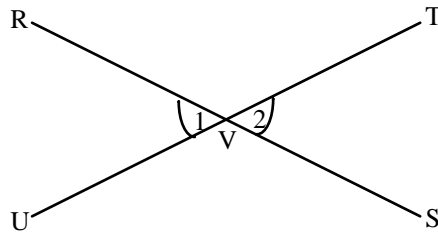


**19.** Given the vertical angles 1 and 2, solve for  $x$  if:

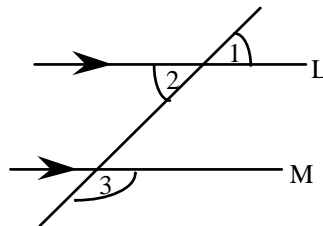
a)  $\angle 1 = 48 - 3x$   
 $\angle 2 = 2x + 43$

b)  $\angle 1 = \frac{3}{2}x + 12$   
 $\angle 2 = \frac{7}{2}x - 12$

c)  $\angle 1 = x^2$   
 $\angle 2 = 6x$



**20.** If  $L \parallel M$  and  $\angle 1 = 9x - \frac{8}{3}y$ ,  $\angle 2 = 7x + \frac{y}{3}$ ,  
 and  $\angle 3 = 3x - \frac{y}{3}$ , solve for  $x$  and  $y$ .



**MAT 1175 Course Review (Page 4)**

**ANSWERS:**

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

b)  $3y + 2 + \frac{7}{y-2}$

2. a)  $\frac{5x+9}{4(x-3)}$

b)  $y = 4$

3. a)  $9x\sqrt{2x}$

b)  $\frac{x\sqrt{6}}{2}$

4.  $x = 3, y = 1$

5.  $5 \pm 3\sqrt{2}$

6. a)  $2(3 + \sqrt{5})$

b)  $x^2 - 2x\sqrt{3} + 3$

7. a)  $\angle ABE = \angle CED$  (vertical angles)  
 $\angle ABE = \angle CDE$  given  
 $AE = CE$  given  
AAS = AAS

b)  $x = 1, y = 5$

c)  $AC = 18, BD = 6$

8. a)  $x = 8, x = 3$  (reject)

b)  $\frac{9x^9}{5}$

c)  $\frac{2y^2}{3x^4}$

9. a) 4.2

b) 25.2 sq. units

10. a)  $\angle CDE = \angle CAB; \angle CED = \angle CBA$   
(2 angles on the same side of parallel lines  
and on the same side of the transversal are =)  
If 2 angles in 2 triangles are equal, then the  
triangles are similar.

b)  $x = 5; CE = 5; CB = 15; AB = 12$

11. a)  $x = 5; AB = 8; DB = 6; AD = 10$

b) 48 sq. units

12. ASA = ASA;  $x = 8; y = 2$

13. a) 37.7

b) 28.3

14.  $2x - 3$

15. a)  $31\sqrt{3}$

b)  $15\sqrt{2} - 10\sqrt{3}$

16. a) 8

b)  $AC = 8; BC = 15; AB = 17$

c) 60 sq. units

17. 12

18.  $x = 9$

19. a) 1

b) 12

c) 6

**20.**  $x = 18; y = 12$