

MAT 1175 – COURSE REVIEW #1

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

2. Solve for x : $\frac{x+5}{4} - \frac{2-3x}{6} = \frac{14}{3}$

3. Solve for x : $\sqrt{x+1} + 5 = x$

4. Combine in each example below:

a) $2\sqrt{72} - 5\sqrt{8}$

b) $\frac{3x}{4y} - \frac{5}{6y^2}$

5. Rationalize the denominators in each example below:

a) $\frac{8}{5\sqrt{3}}$

b) $\frac{3}{\sqrt{3} - \sqrt{2}}$

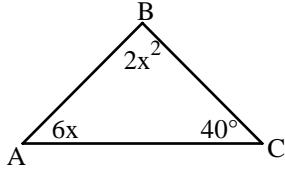
6. Solve graphically:

$$x + y = 7$$

$$2x - y = 5$$

7. Solve using the quadratic formula: $2x^2 - 2x - 1 = 0$

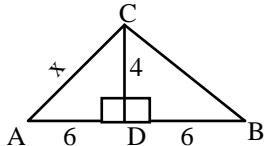
8. Find x , $\angle A$, and $\angle B$



9. a) Why are $\triangle ACD$ and $\triangle BCD$ congruent?

b) Find x

c) Find the area of $\triangle ABC$



10. Simplify:

a) $\frac{2x^2 - 3x - 14}{x + 2}$

b) $\frac{2x^{-3}}{(x^2)^2}$

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

11. $(2 + \sqrt{3})(2 + \sqrt{3}) =$

12. Solve for x : $\frac{5x+3}{9} - \frac{x+1}{3} = 2$

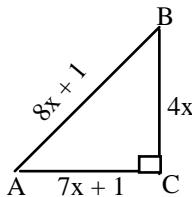
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13. Simplify: $\sqrt{\frac{2a^2b^3}{3}}$

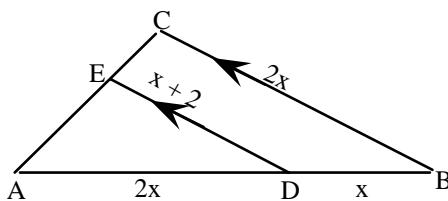
14. a) Divide by long division: $\frac{3x^2 - 2x + 3}{x + 2}$ b) Combine: $\frac{5x}{x^2 - x - 6} - \frac{2}{x - 3}$

15. Solve using the quadratic formula: $x^2 + 2x - 1 = 0$

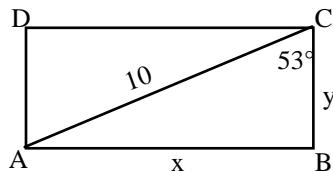
16. Find x , AB, BC, and AC



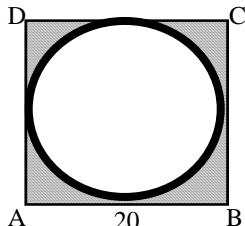
17. a) State the relationship of $\triangle ABC$ to $\triangle ADE$
b) Find x , AB, AD, BC, and DE



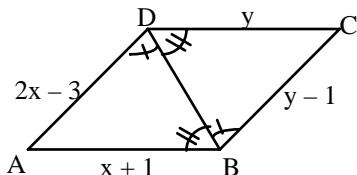
18. Find x , y and the area of the rectangle. Leave answers to the nearest tenth.
 $\sin 53^\circ = .7986$
 $\cos 53^\circ = .6018$
 $\tan 53^\circ = 1.3270$



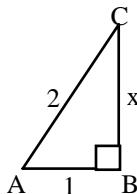
19. a) Find the area of the square ABCD.
 b) Find the area and the circumference of the circle.
 c) Find the area of the shaded part.



20. a) Why are $\triangle ABD$ and $\triangle CDB$ congruent?
 b) Which sides of the congruent triangles are equal?
 c) Find x and y .



21. a) Find x
 b) Find $\sin A$, $\cos A$, and $\tan A$.



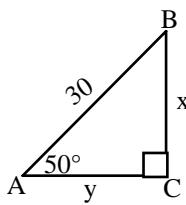
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- 22. a) Find x and y (to the nearest tenth)**
b) Find the area of $\triangle ABC$

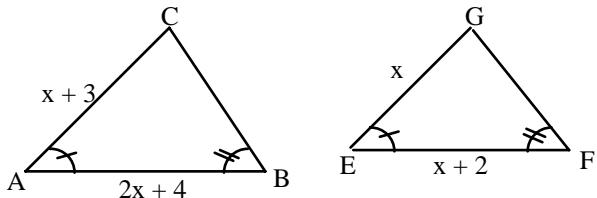
$$\sin 50^\circ = .7660$$

$$\cos 50^\circ = .6428$$

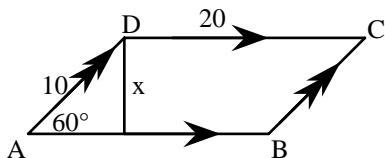
$$\tan 50^\circ = 1.1918$$



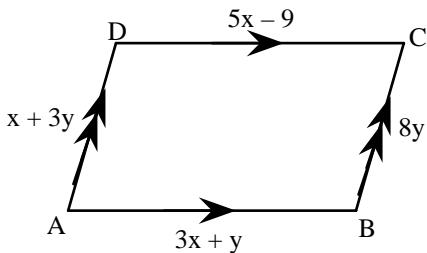
- 23. a) What is the relationship which exists between $\triangle ABC$ and $\triangle EFG$?**
b) Find x .



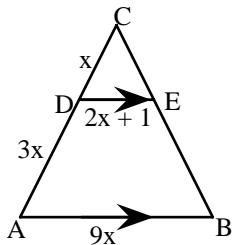
- 24. a) Find x (leave the answer in radical form)**
b) Find the area of the parallelogram ABCD.
 (Leave the answer in radical form)



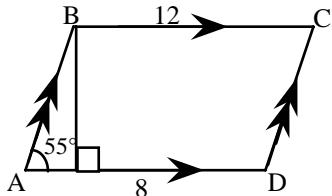
- 25. a) Find x and y**
b) Find AB and BC



- 26. a) Explain why $\triangle DEC$ is similar to $\triangle ABC$.**
b) Find x



- 27. Find the area of the parallelogram ABCD to the nearest tenth, if $BE \perp AD$, $ED = 8$, $BC = 12$, $\angle A = 55^\circ$**
 $\sin 55^\circ = .8192$
 $\cos 55^\circ = .5735$
 $\tan 55^\circ = 1.4281$



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ANSWERS:

1. $2x + 7$

4. a) $2\sqrt{2}$

b) $\frac{9xy - 10}{12y^2}$

7. $\frac{1 \pm \sqrt{3}}{2}$

10. a) $2x - 7$

b) $\frac{2}{x^7}$

c) $9x^{10}$

13. $\frac{ab\sqrt{6b}}{3}$

16. $x = 2$; $AB = 17$; $BC = 8$;
 $AC = 15$

19. a) 400 sq. units

b) Area of circle = 314 sq.
units

Circumference = 62.8 units

c) 86 sq. units

22. a) $x = 23$; $y = 19.3$

b) 222

25. a) $x = 5$; $y = 1$

b) $AB = 16$; $BC = 8$

2. $x = 5$

5. a) $\frac{8\sqrt{3}}{15}$

b) $3(\sqrt{3} + \sqrt{2})$

8. $x = 7$; $x = -10$ (reject)
 $\angle A = 42^\circ$; $\angle B = 98^\circ$

11. $7 + 4\sqrt{3}$

14. a) $3x - 8 + \frac{19}{x+2}$
b) $\frac{3x - 4}{(x-3)(x+2)}$

17. a) $\Delta ABC \sim \Delta ADE$ (triangles
are similar)

b) $x = 6$; $AB = 18$; $AD = 12$;
 $BC = 12$; $DE = 8$

20. a) $\Delta ADB \cong \Delta CBD$;
 $DB = DB$; $\angle ABD = \angle CDB$
ASA

b) $AB = DC$; $AD = BC$
c) $x = 3$; $y = 4$

23. a) $\Delta ABC \sim \Delta EFG$ (similar)

b) $x = 3$

26. a) $\angle CAB = \angle CDE$;
 $\angle CBA = \angle CED$

corresponding angles are =
(angles on the same side of
 $2 \parallel$ lines and on the same
side of the transversal). If 2
angles in a Δ are = to 2 \square 's
in a second Δ , the Δ 's are
similar.

b) $x = 4$

3. $x = 8$; $x = 3$ (reject)

6. $(4, 3)$

9. a) $AD = BD$; $\angle ADC = \angle BDC$
 $CD = CD$; SAS

b) $x = 2\sqrt{13}$

c) 24 sq. units

12. $x = 9$

15. $-1 \pm \sqrt{2}$

18. $x = 8$; $y = 6$; Area = 48 sq.
units

21. a) $\sqrt{3}$

b) $\sin A = \frac{\sqrt{3}}{2}$; $\cos A = \frac{1}{2}$
 $\tan A = \sqrt{3}$

24. a) $5\sqrt{3}$

b) $100\sqrt{3}$ sq. units

27. 68.4 sq. units