Assessment 2 Review

1. Use factoring methods to solve the equations:

a. $135x^2+6x-8=0$

b. $x^2-24x+135=0$

c. $11x=12x^2-5$

d. $x^2-6x-112=0$

e. $12x^2+16x-3=0$

2. Rationalize the following expression so that it becomes the simpliest form:

a. $\dfrac{\sqrt{7}+\sqrt{3}}{\sqrt{7}-\sqrt{3}}$

b. $(\sqrt{21}+8)(\dfrac{\sqrt{2}+\sqrt{7}}{\sqrt{7}-\sqrt{2}})$

c. $\left(\sqrt{3}-2\right)\cdot\dfrac{2\sqrt{5}}{\sqrt{12}-4}$

d. $\sqrt{8}\cdot\dfrac{\sqrt{24}}{\sqrt{72}}$

3. Use complete the square to solve the following equation:

a. $x^2-5x+\dfrac{9}{4}=0$

b. $\dfrac{1}{3}x^2+2x-\dfrac{1}{6}=0$

c. $2x^2+4x=9$

d. $(x-1)(2x+1)=3$

4. for question a-c, Graph the following function, and identify

i) opening

ii) vertex and axis of symmetry

iii) x and y intercepts

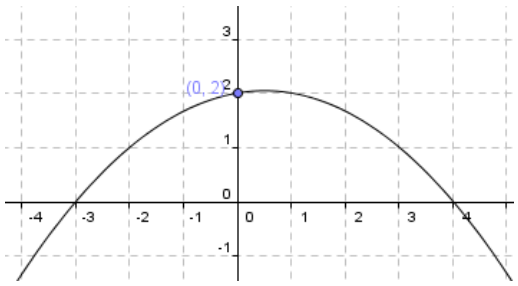
a. $y=-x(x+3)$

b. $y=\dfrac{1}{2}x^2+3x+5$

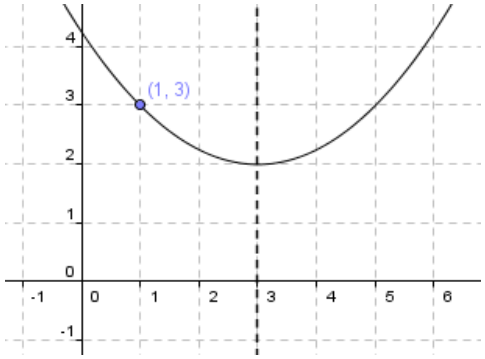
c. $y=-\dfrac{2}{3}x^2-4x-2$

for question d and e, find the quadratic function in standard form:

d.



e.



5. If $z_1=2+i$, $z_2=-3+4i$, $z_3=-2i$

evaluate the following expressions:

a. $z_4=\dfrac{z_1^2}{z_3}$

b. $z_5=\dfrac{z_2+z_3}{z_1}$

c. $z_6=z_1z_2+z_3^2$

d. Find the norms of z_1 to z_6, determine the complex number with largest norm and the smallest norm.

6. Given

$$A=\begin{pmatrix}2 & 0 & -1\\ -1 & 2 & 0\\ 0 & -1 & 2\end{pmatrix}, B=\begin{pmatrix}2 & -1 & 0\\ 0 & 2 & -1\\ -1 & 0 & 2\end{pmatrix}$$

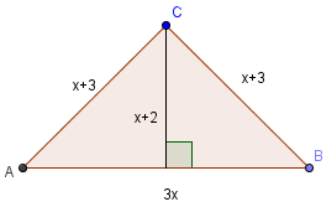
Find

a. AB

b. BA

7. The surface area of a right cylinder is 10π square inches. If the height of the cylinder is 7 inches, find the radius of the cylinder?

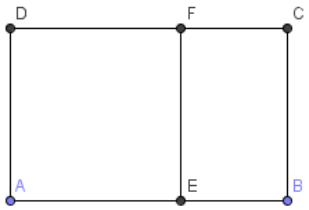
8. If triangle ABC has an area of 24 square units. What is the perimeter of triangle ABC?



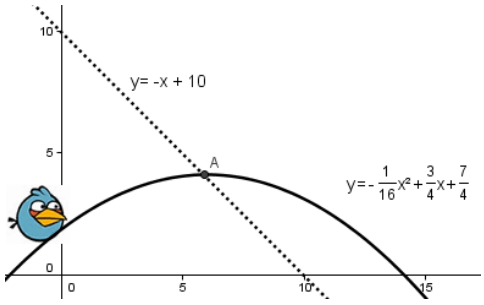
9. In art, a golden rectangle(as shown, ABCD) is considered to be the most aesthetically pleasing (the most beautiful) to human eyes.

It follows a rule: " the ratio of the lengths of long side (AB) to short side(BC) and the ratio of the length of the short side(BC) to the difference of the lengths of the long side and short side (AB – BC) are the same." In another words, $ABCD \sim BCFE$

Now, if BE = 2, and AEFD is a square, what is the area of the golden rectangle ABCD?



10. You shot an angry bird from (10,0) as shown in the diagram. If the trajectory of the angry bird was $y=-\frac{1}{16}x^2+\frac{3}{4}x+\frac{7}{4}$, and the trajectory of the bullet was $y=-x+10$, what were the coordinates where the angry bird was shot (point A)?



11. (Tomato Garden) Frank has a backyard (the region bounded by x-axis, y-axis and $y=-\frac{4}{5}x+4$)as shown. Let rectangle (ABCD) be his tomato garden. Find coordinates of C, so that the area of the garden is maximized.