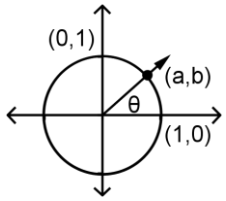
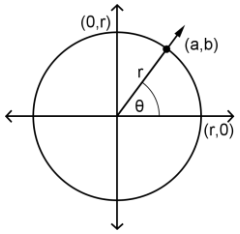
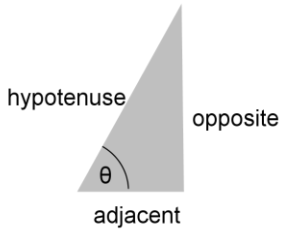
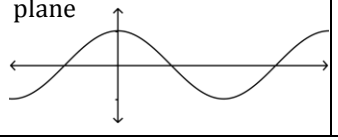
Different Interpretations of Trigonometric Functions, Fall 2014

	Setting/Picture	cos(θ)	sin(θ)	Other trig functions	Comments
A.	Unit Circle, (a,b) is the point where the angle intersects the unit circle 	input: angle in standard position output: a (the x-coordinate)	input: angle in standard position output: b (the y-coordinate)	Obtained from sine and cosine: $\tan\theta = \frac{\sin\theta}{\cos\theta}$ $\cot\theta = \frac{\cos\theta}{\sin\theta}$ $\sec\theta = \frac{1}{\cos\theta}$ $\csc\theta = \frac{1}{\sin\theta}$	A. is like B. with r=1
B.	Circle with center (0,0), radius r. (a,b) is the point where the angle intersects the circle 	input: angle in standard position output: the ratio $\frac{a}{r} = \frac{\text{x} - \text{coord. of point}}{\text{radius of circle}}$	input: angle in standard position output: the ratio $\frac{b}{r} = \frac{\text{y} - \text{coord. of point}}{\text{radius of circle}}$	Ratios of x-, y-coordinates and/or the radius of the circle: $\tan\theta = \frac{b}{a}$ $\cot\theta = \frac{a}{b}$ $\sec\theta = \frac{r}{a}$ $\csc\theta = \frac{r}{b}$	B. is like C, but you need to add the sign based on which quadrant the terminal side of the angle is in.
C.	Right Triangle 	input: an angle between 0 and 90° output: ratio of sides of a right triangle, $\frac{\text{adj}}{\text{hyp}}$	input: an angle between 0 and 90° output: ratio of sides of a right triangle $\frac{\text{opp}}{\text{hyp}}$	Ratios of sides of the triangle: $\tan\theta = \frac{\text{opp}}{\text{adj}}$ $\cot\theta = \frac{\text{adj}}{\text{opp}}$ $\sec\theta = \frac{\text{hyp}}{\text{adj}}$ $\csc\theta = \frac{\text{hyp}}{\text{opp}}$	C. is like B. with all triangles in Quadrant 1
D.	Graph on coordinate plane 	input: any real number output: the real number obtained by computing cosine (use method A.) of θ radians	Similar to cosine	Similar to cosine	