

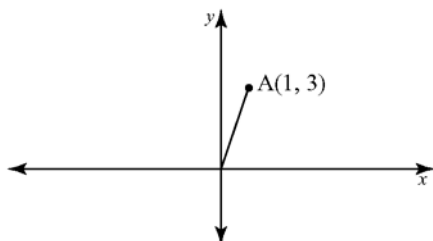
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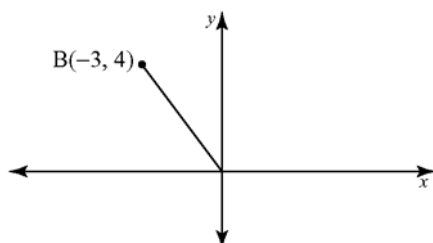
4.2 Co-terminal and Related Angles**BLM 4-5**

1. For each point given on the terminal arm of the angle, determine the exact primary values for the trigonometric ratios of the angle.

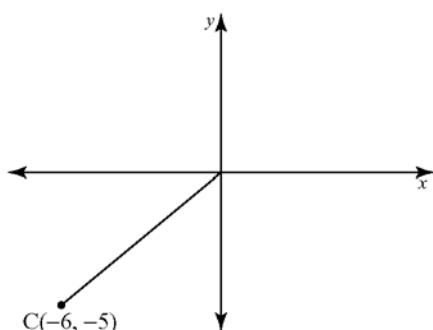
a)



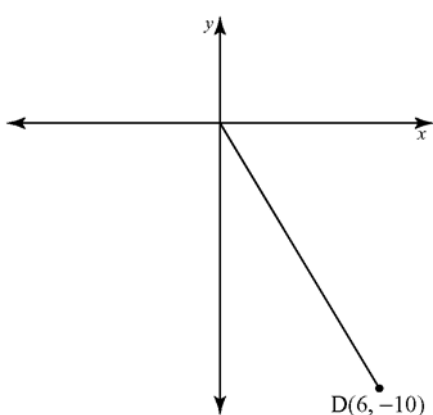
b)



c)



d)



2. The coordinates of a point on the terminal arm of an angle are given. Determine exact expressions for the primary trigonometric ratios for these angles.

- a) E(2, 3) b) F(-3, 5)
c) G(-2, -7) d) H(7, -4)

3. One of the primary trigonometric ratios for an angle is given, as well as the quadrant in which each angle is located. Find the other two trigonometric ratios of the angle.

- a) $\sin A = \frac{3}{4}$, first quadrant
b) $\cos B = -\frac{2}{3}$, second quadrant
c) $\tan C = \frac{9}{11}$, third quadrant
d) $\tan D = \frac{5}{12}$, fourth quadrant

4. Determine two other angles that have the same trigonometric ratios as each given angle.

- a) $\sin 60^\circ$ b) $\cos 230^\circ$
c) $\tan 200^\circ$ d) $\sin 150^\circ$

5. Determine any three positive angles that are co-terminal with 150° .

6. An obtuse angle θ has the point B(-x, y) on its terminal arm.

- a) Express the length of line segment OB in terms of x and y.
b) Write expressions for the primary trigonometric ratios for the angle.

7. Consider $\angle F$ such that $\cos F = \frac{12}{37}$.

- a) Which quadrants can $\angle F$ be in?
b) Find the coordinates of a point on the terminal arm of the angle in each quadrant.
c) If you are also told that the sine of the angle is negative, in which quadrant is $\angle F$?
d) Write the other primary trigonometric ratios for $\angle F$ in the quadrant identified in part c.

