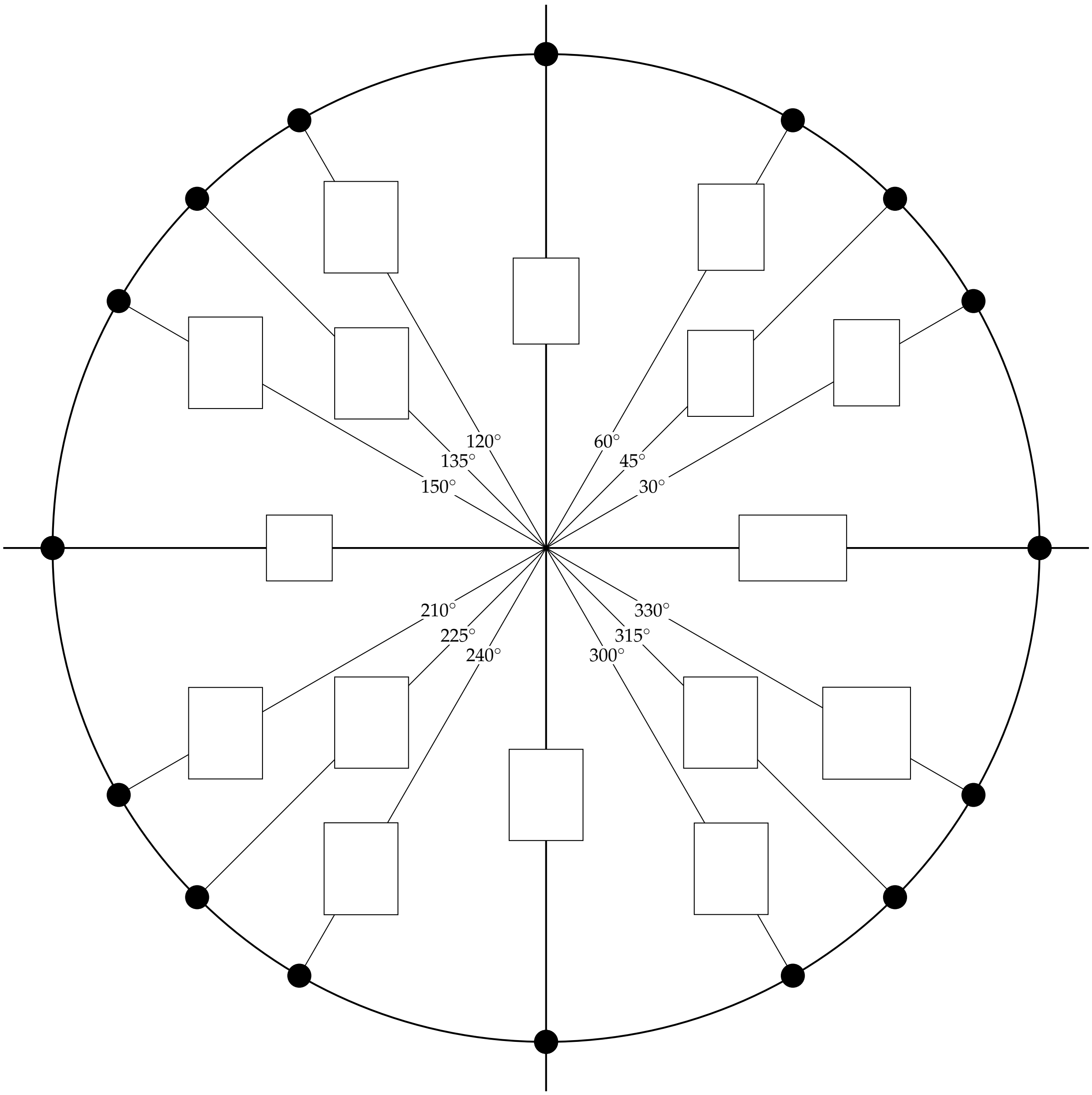
1. Complete the Unit Circle started below.

1.1. Fill in the boxes with the angle measurement in radians, between 0 and 2π, for each of the 16 angles which are measured in degrees.

1.2. Next to each of the 16 points drawn, indicate the (x, y) coordinate of the point on the unit circle.



Instructions For Remaining Trig. Problems 2–5:
First show all your work below the box then put answer in the box.
No credit will be given for an answer just put in a box without proper justification.
Work in a logical fashion, explaining how you arrived at your boxed answer.

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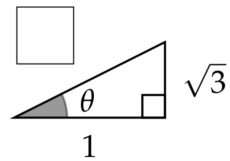
2. Fill in the boxes. You might want to first review the range of the inverse trigonometry functions.

2.1. A reference triangle for $\tan\theta = \frac{\sqrt{3}}{1}$ is:

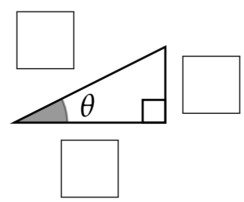


2.2. Express $\arctan\sqrt{3}$ in radians. ANSWER: $\arctan\sqrt{3} = \square$

2.3. Express $\arctan\left({}^{-}\sqrt{3}\right)$ in radians. ANSWER: $\arctan\left({}^{-}\sqrt{3}\right) = \square$

3. Fill in the boxes or circle the correct answer.

3.0. A reference triangle for $\tan\theta = \frac{4}{3}$ is



3.1. Can θ be between 0 and $\frac{\pi}{2}$? (1^{st} quadrant) circle one: YES or NO

Answer if (and only if) you circled YES. Then $\sin\theta = \square$

3.2. Can θ be between $\frac{\pi}{2}$ and π? (2^{nd} quadrant) circle one: YES or NO

Answer if (and only if) you circled YES. Then $\sin\theta = \square$

3.3. Can θ be between π and $\frac{3\pi}{2}$? (3^{rd} quadrant) circle one: YES or NO

Answer if (and only if) you circled YES. Then $\sin\theta = \square$

3.4. Can θ be between $\frac{3\pi}{2}$ and 2π? (4^{th} quadrant) circle one: YES or NO

Answer if (and only if) you circled YES. Then $\sin\theta = \square$

4. Let $x = 5\sec\theta$ and $0 < \theta < \frac{\pi}{2}$.
Without using inverse trigonometric functions, express $\tan\theta$ as a function of x.

ANSWER: $\tan\theta =$

5. Let $x = 5\sec\theta$ and $\frac{\pi}{2} < \theta < \pi$.
Without using inverse trigonometric functions, express $\tan\theta$ as a function of x.

ANSWER: $\tan\theta =$

Instructions For Remaining $u - du$ Problems 6 – 11:
First show all your work below the box then put answer in the box.
No credit will be given for an answer just put in a box without proper justification.
Box your $u - du$ substitution. Work in a logical fashion.

How to pick u for a $u - du$ substitution? Loosely speaking, we often view an integral as

$$\int f(x)\,dx = \int \text{(a function of } x\text{)} \; [\text{ (another function of } x\text{) } dx]$$

where the [(another function of x) dx] is essentially (up to a constant) the du. In $u - du$ sub.'s, when picking the u, we do not worry about the constants since a constant just jumps over the integral sign and comes along for the ride. Then we adjust for that constant (by finding another constant K) and write

$$\int f(x)\; dx = K \int \text{(a function of } x\text{)} \boxed{\text{(still another function of } x\text{) } dx}$$

where the $\boxed{\text{(still another function of } x\text{) } dx}$ is exactly the du.

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6. $\displaystyle\int \frac{\cos x\,dx}{\sqrt{1+\sin x}} =$ + C

7. $\displaystyle\int \frac{dx}{x \ln x} =$ + C

8. $\displaystyle\int xe^{-x^2}\,dx =$ + C

Recall order of operations: $e^{-x^2} = e^{\left(-x^2\right)}$.

9. $\displaystyle\int \frac{dx}{\sqrt{9-4x^2}} = \qquad + C$

10. $\displaystyle\int \frac{x\,dx}{\sqrt{9-4x^2}} = \qquad + C$

11. Lastly, an definite integral (i.e., an integral with limits of integration).
The previous integrals were indefinite integral (i.e., an integrals without limits of integration).

$$\int_{x=\pi/6}^{x=\pi/3} \frac{\sin x}{\cos^2 x}\ dx\ =$$