
No books, notes or graphing calculators. Turn off your cell phones. SHOW ALL YOUR WORK.

- (5) 1. Draw a circle with the center at the origin and radius $2\sqrt{2}$.
- (a) Write equation of the circle
- (b) Check that the point $(2, 2)$ is on the circle and sketch the tangent line to the circle at this point
- (c) Compute equation of this tangent line
- (5) 2. Sketch the graph of the function $f(x) = \sin^2 x$. Show each intermediate graph separately. For each intermediate graph, indicate domain and range. On the graph of $f(x)$ mark at least 4 points where the graph intersects the x -axis. What is the period of $f(x)$?
(Hint: You may use the "double angle formula": $\sin^2 x = \frac{1 - \cos 2x}{2}$).
- (1) 3. **Bonus.** Sketch the graph of the function $f(x) = |\cos(|x|)|$.