

1. Find the x -values where $f(x) = \frac{x}{2} + \sin(x)$ attains its maximum and minimum on the interval $[0, 3]$.
2. Find the point on the line $y = -2x + 2$ that is closest to the origin.
3. A cable is to be run from a power plant on one side of a river to a factory on the other side. It costs \$4 per meter to run the cable over land, while it costs \$5 per meter to run the cable under water. Suppose the river is 300 meters wide and the factory is 1000 meters downstream from the power plant.

What is the most economical route to lay the cable?

How much will it cost?