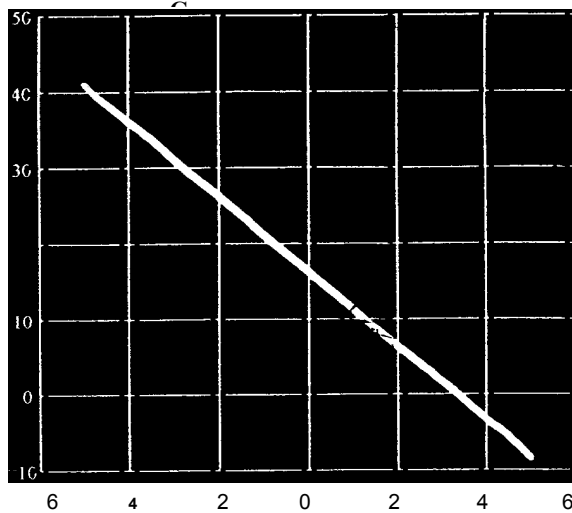


Answers to Problem Set 1

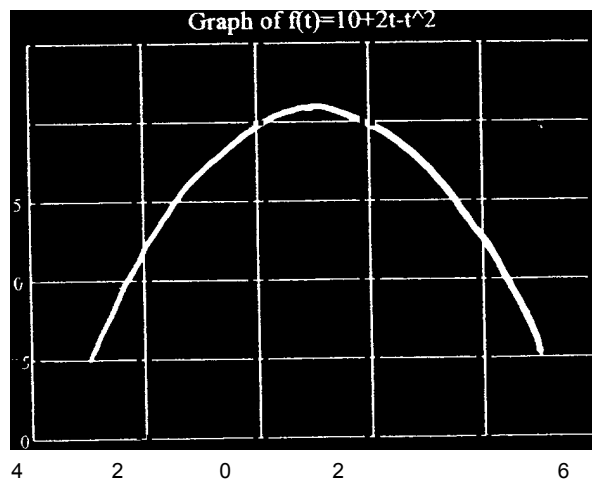
Question A1. The line's slope is -5 , its y -intercept is 16 and its x -intercept is $16/5$.

Graph of $y = 16 - 5x$



Question A2. $P^* = 5$ and $Q^* = 500$.

Question A3. $f'(t) = 2 - 2t$. Setting the derivative equal to zero and solving yields the critical point $t^* = 1$. Compare the solution using calculus to the graph below:



Question A4.

- (a) $f'(x) = 0$
- (b) $f'(x) = 15x^2$
- (c) $f'(x) = x^{-2/3}$
- (d) $f'(x) = -2/x^3$
- (e) $f'(x) = 3/x$
- (f) $f'(x) = e^x$
- (g) $f'(x) = 15e^{3x}$
- (h) $f'(x) = 3x^2 - 10x + 6$
- (i) $f'(x) = 8x^7$

Question A5.

- (a) $f'(x) = 4a^3x^3$
- (b) $f'(x) = -a/x^2$
- (c) $f(x) = 2 + 2x + \frac{2x}{x^2 + a^2}$

Question B1. Loach is the administrator of the estate of Benjamin Sands, who was killed by the railroad car.

Question B2. The court did not inquire into factual matters. The court was an appeals court, and appeals courts traditionally only look into questions of law, not of fact.

Question B3. The court ruled in favor of Loach; that is the appeals court dismissed the railroad's appeal and did not overturn the decision of the trial court.

Question B4. The standard in *Davies v. Mann* was that a plaintiff's contributory negligence is a complete bar to his/her recovery of damages unless the defendant had the last clear chance to avoid the harm. This is called the "last clear chance doctrine." In the present case, the railroad claimed not to have had the last clear chance to avoid harm since its brakes were faulty. The court found that this did not remove their obligation to avoid harm, since it was earlier negligence which prevented them from having the "last clear chance." To sum up, the new standard can be stated: "Contributory negligence is a complete bar to recovery unless the defendant had, *or should have had*, the last clear chance to avoid harm."