

Math 171A D.F. Calc. Hw 1

What got graded: §1.1 #28, 43

§1.2 #14

28

Find the domain of

$$f(x) = \frac{5x+4}{x^2+3x+2}$$

Sol'n: $x^2+3x+2 \neq 0$.

$$\downarrow$$
$$(x+2)(x+1) \neq 0$$

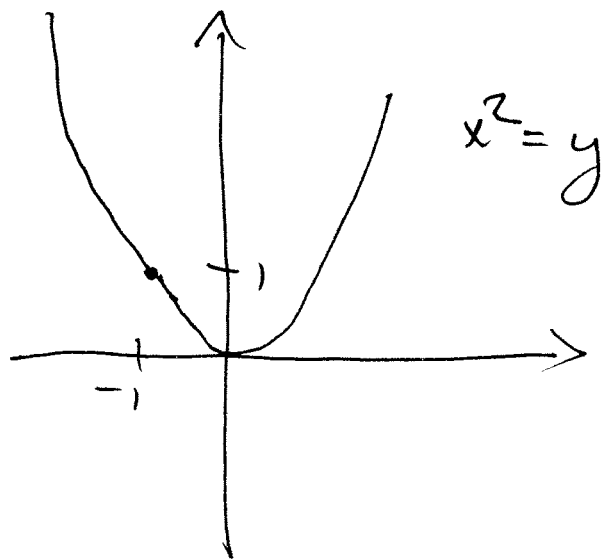
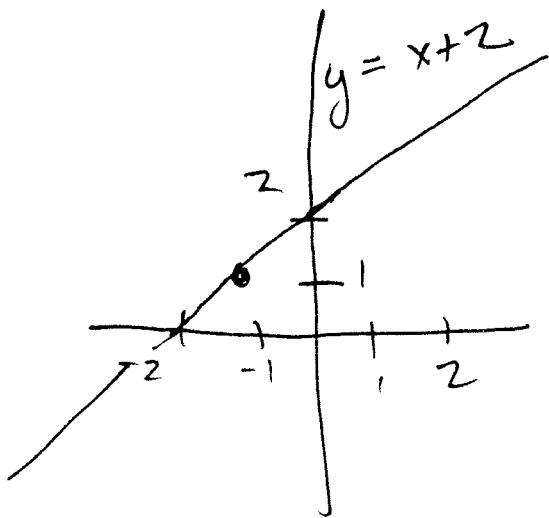
$$\downarrow$$
$$x \neq -2, -1$$

$$\text{Domain} = (-\infty, -2) \cup (-2, -1) \cup (-1, \infty)$$

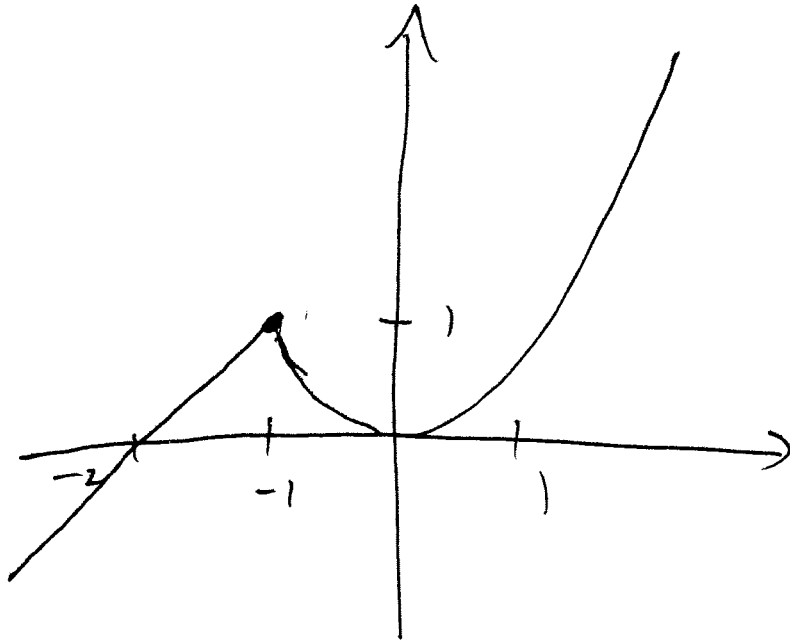
43 Find the domain & sketch the graph.
of $f(x) = \begin{cases} x+2 & x \leq 1 \\ x^2 & x > 1 \end{cases}$

Sol'n x can be anything and so the
domain is \mathbb{R} .

Graph: These are what the graphs of
the two pieces look like.



So the graph of f is



(14) Jason leaves Detroit at 2pm and drives at constant speed to Ann Arbor 40 miles away, where he arrives at 2:50 pm.

- Express the distance traveled in terms of time elapsed.
- Draw the graph of the function in (a)
- What is the slope of this line, and what does it represent?

Sol'n:

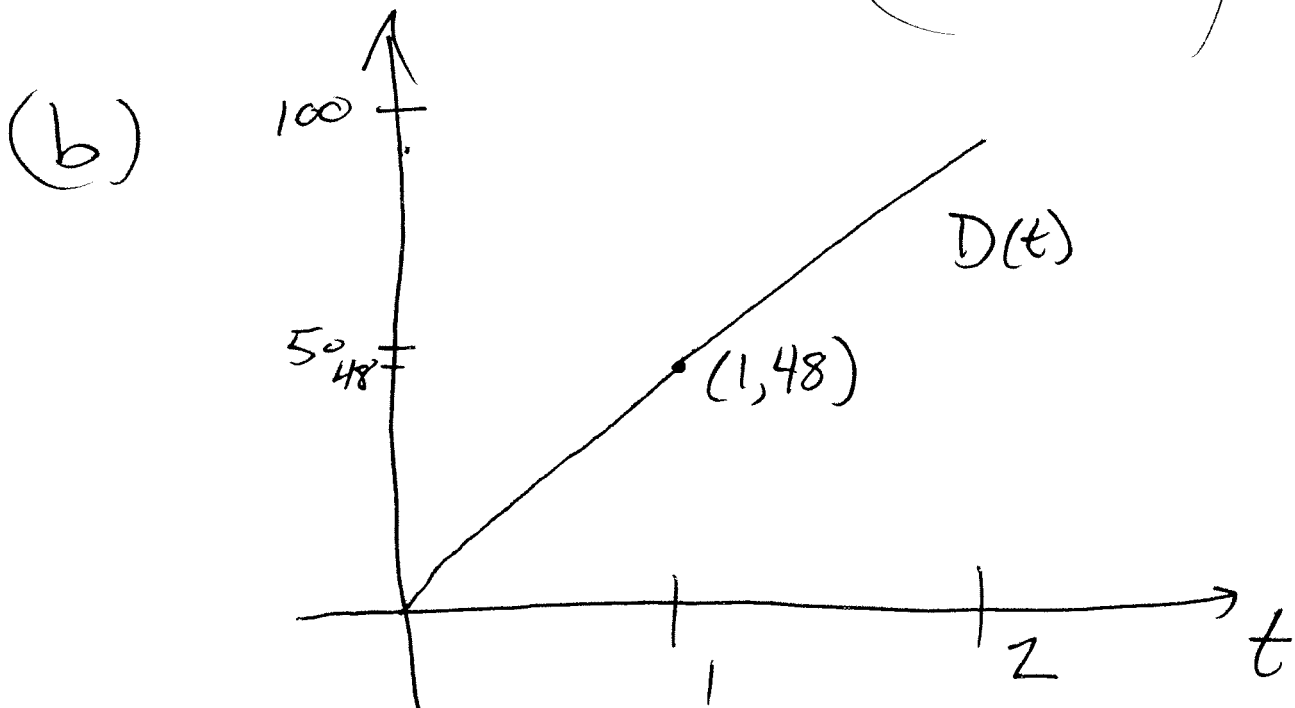
(a) Jason drove at constant speed

$$\frac{40 \text{ miles}}{50 \text{ minutes}} = .8 \frac{\text{mi}}{\text{min}}$$

$$\text{or } .8 \frac{\text{mi}}{\text{min}} \times \frac{60 \text{ min}}{\text{hr}} = 48 \frac{\text{miles}}{\text{hour}}$$

At constant speed, distance = rate \times time:

$$\text{So } D(t) = 48t \quad \left(\text{where } t \text{ is measured in hours} \right)$$



(C) The slope 48 is the speed.