2.5 HW Solutions

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Question 1:

a.)

Solution:

We can see that the values of a that approach a different number from the right side than from the left is values ***0 and 1***

b.)

Solution:

We can see that the value a decreases without bound at ***-2***, Also, -1 is shown to not be defined on the graph, so the answers are ***-2,-1***

c.)

Solution:

We can see that that values of a that are ***Discontinous*** are **-2,-1,0,1**. We can see that -2 has a hole, -1 is not defined, are zero and 1 have a limit of DNE

Question 2:

a.)

Solution:

We can see that $\lim_{x \to a} f(x)$ does not exist at a = 1,5

b.)

Solution:

We can see that values **1,3,5** are Discontinous (not continuous). We can see that with a = 1, the limit is not a finite number, for a = 3, there is a hole in the graph and that $\lim_{x \to a} f(x) \neq f(a)$. For value a = 5, we can see that the limit does not exist.

Question 3:

a.)

Solution:

See hw

Question 4:

a.)

Solution: 😄

See hw

Question 5:

a.)

Solution: 😄

See hw

Question 6:

a.)

Solution: 😄

To state the domain, we must factor the denomonator;

$$(v+8)(v-5).$$

Now we get that v $\neq$ -8 and v $\neq$ 5. So if we write the domain in interval notation, we get

$$(-\infty,-8)\cup(-8,5)\cup(5,\infty).$$

Question 7:

a.)

Solution: 😄

See hw

Question 8:

a.)

Solution: 😄

Domain of arccos, is [-1,1], so we must find where the arguments are defined, if we set the expression inside the parenthesis $\geqslant$ - 1,

$$e^t \geqslant -1.$$

to solve this inequality, we must take the ln of both sides to solve for t

$$t \geqslant ln(0).$$

But ln(0) is undefined. So we set the value $\geqslant$ to 1.

$$e^2 \geqslant 1.$$

Now if we take the ln of both sides, we get:

$$t \geqslant ln(2).$$

so now we know that the domain of this composite function is:

$$(-\infty, ln(2)].$$

Question 9:

a.)

Solution: 😄

1.)

$$\begin{aligned} f(3) &= 3 \cdot \sqrt{13 - (3)^2} \\ &= 6. \end{aligned}$$

Now we check to see if 6 is within the domain of this function.

Because this is a radical function, we must take the contents inside that radical and set $\geqslant 0$

$$\begin{aligned} 13 - x^2 &\geqslant 0 \\ -x^2 &\geqslant -13 \\ x^2 &\leqslant 13. \end{aligned}$$

So if we take the sqrt of both sides, we get:

$$x \leqslant \sqrt{13} \text{ and } x \leqslant -\sqrt{13}.$$

so our domain is:

$$[-\sqrt{13}, \sqrt{13}].$$

Because 3 lies within this domain, we can plug in 3 into f(x) and get the limit:

$$\begin{aligned} \lim_{x \to 3} 3 \cdot \sqrt{13 - (3)^2} \\ = 6. \end{aligned}$$

So 6 is our answer.

Question 10:

a.)

Solution: 😄

See hw

Question 11:

a.)

Solution: 😄

explanation