

5. Considering that  $f(x) = f(x)g(x) = f(x)g(x)$ , where  $f$  and  $g$  are functions whose graphs are shown below.

a) Find  $f'(x)$  and  $g'(x)$ .

b) Consider that  $h(x) = f(x)g(x)$ . Find  $h'(1)$ ,  $h'(0)$  and  $h'(2)$ .

7. Consider that  $h(x) = f(x)g(x)$ , where  $f$  and  $g$  are functions whose graphs are shown below.

a) Evaluate  $h'(2)$  and  $h'(0)$ .

b) Is  $h'(x)$  positive, negative or zero? Explain your answer.

c) Is  $h'(x)$  positive, negative or zero? Explain your answer.

Primo Test  
Calculus 1 2nd partial  
Quiz # 2A

Name: Paul Fernando del Bosque Mat. 4510170

1. Determine if true or false for each of the following statements. (5 points each)

1.  $\ln(x)$  is the derivative of  $y = e^{-x}$ .  $y' = e^{-x}$ .

2.  $\ln(x)$  is the derivative of  $y = 2e^{-4x}$ .  $y' = \ln(x) \cdot (-4)$ .

3.  $\ln(x)$  is the function of position of an object in motion, then  $0.5t^2$  is equal to the function of the acceleration of the object.

4.  $\ln(x)$  is the velocity of the car as a function of time, then the derivative of this function with respect to time, describes the acceleration of the car.

5. Circle the right answer. (10 point each)

1.  $\ln(x)$  is the derivative of  $y = 2x^2$ . Is:   
 A)  $y' = 2x^2$  B)  $y' = 2x^3$  C)  $y' = \frac{2x}{x^2}$  D)  $y' = 6x^2$

2.  $\ln(x)$  is the derivative of  $y = \ln(x)2x - 4$ . Is:   
 A)  $y' = \frac{1}{2x-4}$  B)  $y' = \ln(2x-4)$  C)  $y' = \frac{1}{2x-4} + \ln(2x-4)$  D)  $y' = \frac{1}{2x-4}$

3.  $\ln(x)$  is the equation that gives the velocity of an object  $h(t) = 2t^2$ , then the equation that gives the acceleration is:   
 A)  $h'(t) = 2t^2 + 1$  B)  $h'(t) = 6t^2$  C)  $h'(t) = 3t^2$  D)  $h'(t) = 4t$

Primo Test  
Calculus 1 2nd partial  
Quiz # 2A

Name: Paul Fernando del Bosque Mat. 4510170

1. If  $f(x) = 1$ ,  $f'(x) = 6$ ,  $g(x) = -3$ ,  $g'(x) = 2$ . Find the value of:   
 a)  $(f \cdot g)'(5) = f'(x)g(x) + f(x)g'(x) = 6(-3) + 1(2) = -18 + 2 = -16$   
 b)  $(f/g)'(5) = \frac{f'(x)g(x) - f(x)g'(x)}{(g(x))^2} = \frac{6(-3) - 1(2)}{(-3)^2} = \frac{-18 - 2}{9} = -\frac{20}{9}$   
 c)  $(f/g)'(5) = \frac{f'(x)g(x) - f(x)g'(x)}{(g(x))^2} = \frac{6(-3) - 1(2)}{(-3)^2} = -\frac{20}{9}$

2. If  $f(x) = 4$ ,  $g(x) = 2$ ,  $f'(x) = -6$  and  $g'(x) = 5$ , find the following values:   
 a)  $(f \cdot g)'(3) = f'(x)g(x) + f(x)g'(x) = -6(2) + 4(5) = -12 + 20 = 8$   
 b)  $(f/g)'(3) = \frac{f'(x)g(x) - f(x)g'(x)}{(g(x))^2} = \frac{-6(2) - 4(5)}{2^2} = \frac{-12 - 20}{4} = -\frac{32}{4} = -8$   
 c)  $(f/g)'(3) = \frac{f'(x)g(x) - f(x)g'(x)}{(g(x))^2} = \frac{-6(2) - 4(5)}{2^2} = -8$

3. If  $h(x) = f(x)g(x)$ , use the table to find  $h'(3)$ ,  $h'(0)$  and  $h'(1)$ .

x	f(x)	f'(x)	g(x)	g'(x)
3	2	1	1	2
0	-1	0	-1	3
1	2	-1	2	5

$h'(3) = f'(3)g(3) + f(3)g'(3) = 1(1) + 2(2) = 5$   
 $h'(0) = f'(0)g(0) + f(0)g'(0) = 0(-1) + (-1)(3) = -3$   
 $h'(1) = f'(1)g(1) + f(1)g'(1) = (-1)(2) + 2(5) = 8$

4. If  $h(x) = f(x)g(x)$ , use the table to find  $h'(1)$ ,  $h'(0)$  and  $h'(1)$ .

x	f(x)	f'(x)	g(x)	g'(x)
1	2	1	1	2
0	-1	0	-1	3
1	2	-1	2	5

$h'(1) = f'(1)g(1) + f(1)g'(1) = 1(1) + 2(2) = 5$   
 $h'(0) = f'(0)g(0) + f(0)g'(0) = 0(-1) + (-1)(3) = -3$   
 $h'(1) = f'(1)g(1) + f(1)g'(1) = (-1)(2) + 2(5) = 8$

Paul Fernando del Bosque 4510170

1)  $y = 2x^2$   $y' = 4x$   
 $y = 3x^3$   $y' = 9x^2$   
 $y = 5x^4$   $y' = 20x^3$   
 $y = 7x^5$   $y' = 35x^4$   
 $y = 9x^6$   $y' = 54x^5$   
 $y = 11x^7$   $y' = 77x^6$   
 $y = 13x^8$   $y' = 104x^7$   
 $y = 15x^9$   $y' = 135x^8$   
 $y = 17x^{10}$   $y' = 170x^9$   
 $y = 19x^{11}$   $y' = 209x^{10}$   
 $y = 21x^{12}$   $y' = 252x^{11}$   
 $y = 23x^{13}$   $y' = 299x^{12}$   
 $y = 25x^{14}$   $y' = 350x^{13}$   
 $y = 27x^{15}$   $y' = 405x^{14}$   
 $y = 29x^{16}$   $y' = 464x^{15}$   
 $y = 31x^{17}$   $y' = 527x^{16}$   
 $y = 33x^{18}$   $y' = 594x^{17}$   
 $y = 35x^{19}$   $y' = 665x^{18}$   
 $y = 37x^{20}$   $y' = 740x^{19}$   
 $y = 39x^{21}$   $y' = 819x^{20}$   
 $y = 41x^{22}$   $y' = 902x^{21}$   
 $y = 43x^{23}$   $y' = 989x^{22}$   
 $y = 45x^{24}$   $y' = 1080x^{23}$   
 $y = 47x^{25}$   $y' = 1175x^{24}$   
 $y = 49x^{26}$   $y' = 1274x^{25}$   
 $y = 51x^{27}$   $y' = 1377x^{26}$   
 $y = 53x^{28}$   $y' = 1484x^{27}$   
 $y = 55x^{29}$   $y' = 1595x^{28}$   
 $y = 57x^{30}$   $y' = 1710x^{29}$   
 $y = 59x^{31}$   $y' = 1829x^{30}$   
 $y = 61x^{32}$   $y' = 1952x^{31}$   
 $y = 63x^{33}$   $y' = 2079x^{32}$   
 $y = 65x^{34}$   $y' = 2210x^{33}$   
 $y = 67x^{35}$   $y' = 2345x^{34}$   
 $y = 69x^{36}$   $y' = 2484x^{35}$   
 $y = 71x^{37}$   $y' = 2627x^{36}$   
 $y = 73x^{38}$   $y' = 2774x^{37}$   
 $y = 75x^{39}$   $y' = 2925x^{38}$   
 $y = 77x^{40}$   $y' = 3080x^{39}$   
 $y = 79x^{41}$   $y' = 3239x^{40}$   
 $y = 81x^{42}$   $y' = 3402x^{41}$   
 $y = 83x^{43}$   $y' = 3569x^{42}$   
 $y = 85x^{44}$   $y' = 3740x^{43}$   
 $y = 87x^{45}$   $y' = 3915x^{44}$   
 $y = 89x^{46}$   $y' = 4094x^{45}$   
 $y = 91x^{47}$   $y' = 4277x^{46}$   
 $y = 93x^{48}$   $y' = 4464x^{47}$   
 $y = 95x^{49}$   $y' = 4655x^{48}$   
 $y = 97x^{50}$   $y' = 4850x^{49}$   
 $y = 99x^{51}$   $y' = 5049x^{50}$   
 $y = 101x^{52}$   $y' = 5252x^{51}$   
 $y = 103x^{53}$   $y' = 5459x^{52}$   
 $y = 105x^{54}$   $y' = 5670x^{53}$   
 $y = 107x^{55}$   $y' = 5885x^{54}$   
 $y = 109x^{56}$   $y' = 6104x^{55}$   
 $y = 111x^{57}$   $y' = 6327x^{56}$   
 $y = 113x^{58}$   $y' = 6554x^{57}$   
 $y = 115x^{59}$   $y' = 6785x^{58}$   
 $y = 117x^{60}$   $y' = 7020x^{59}$   
 $y = 119x^{61}$   $y' = 7259x^{60}$   
 $y = 121x^{62}$   $y' = 7502x^{61}$   
 $y = 123x^{63}$   $y' = 7749x^{62}$   
 $y = 125x^{64}$   $y' = 8000x^{63}$   
 $y = 127x^{65}$   $y' = 8255x^{64}$   
 $y = 129x^{66}$   $y' = 8514x^{65}$   
 $y = 131x^{67}$   $y' = 8777x^{66}$   
 $y = 133x^{68}$   $y' = 9044x^{67}$   
 $y = 135x^{69}$   $y' = 9315x^{68}$   
 $y = 137x^{70}$   $y' = 9590x^{69}$   
 $y = 139x^{71}$   $y' = 9869x^{70}$   
 $y = 141x^{72}$   $y' = 10152x^{71}$   
 $y = 143x^{73}$   $y' = 10439x^{72}$   
 $y = 145x^{74}$   $y' = 10730x^{73}$   
 $y = 147x^{75}$   $y' = 11025x^{74}$   
 $y = 149x^{76}$   $y' = 11324x^{75}$   
 $y = 151x^{77}$   $y' = 11627x^{76}$   
 $y = 153x^{78}$   $y' = 11934x^{77}$   
 $y = 155x^{79}$   $y' = 12245x^{78}$   
 $y = 157x^{80}$   $y' = 12560x^{79}$   
 $y = 159x^{81}$   $y' = 12879x^{80}$   
 $y = 161x^{82}$   $y' = 13202x^{81}$   
 $y = 163x^{83}$   $y' = 13529x^{82}$   
 $y = 165x^{84}$   $y' = 13860x^{83}$   
 $y = 167x^{85}$   $y' = 14195x^{84}$   
 $y = 169x^{86}$   $y' = 14534x^{85}$   
 $y = 171x^{87}$   $y' = 14877x^{86}$   
 $y = 173x^{88}$   $y' = 15224x^{87}$   
 $y = 175x^{89}$   $y' = 15575x^{88}$   
 $y = 177x^{90}$   $y' = 15930x^{89}$   
 $y = 179x^{91}$   $y' = 16289x^{90}$   
 $y = 181x^{92}$   $y' = 16652x^{91}$   
 $y = 183x^{93}$   $y' = 17019x^{92}$   
 $y = 185x^{94}$   $y' = 17390x^{93}$   
 $y = 187x^{95}$   $y' = 17765x^{94}$   
 $y = 189x^{96}$   $y' = 18144x^{95}$   
 $y = 191x^{97}$   $y' = 18527x^{96}$   
 $y = 193x^{98}$   $y' = 18914x^{97}$   
 $y = 195x^{99}$   $y' = 19305x^{98}$   
 $y = 197x^{100}$   $y' = 19700x^{99}$

Paul Fernando del Bosque 4510170

1)  $y = 2x^2$   $y' = 4x$   
 $y = 3x^3$   $y' = 9x^2$   
 $y = 5x^4$   $y' = 20x^3$   
 $y = 7x^5$   $y' = 35x^4$   
 $y = 9x^6$   $y' = 54x^5$   
 $y = 11x^7$   $y' = 77x^6$   
 $y = 13x^8$   $y' = 104x^7$   
 $y = 15x^9$   $y' = 135x^8$   
 $y = 17x^{10}$   $y' = 170x^9$   
 $y = 19x^{11}$   $y' = 209x^{10}$   
 $y = 21x^{12}$   $y' = 252x^{11}$   
 $y = 23x^{13}$   $y' = 299x^{12}$   
 $y = 25x^{14}$   $y' = 350x^{13}$   
 $y = 27x^{15}$   $y' = 405x^{14}$   
 $y = 29x^{16}$   $y' = 464x^{15}$   
 $y = 31x^{17}$   $y' = 527x^{16}$   
 $y = 33x^{18}$   $y' = 594x^{17}$   
 $y = 35x^{19}$   $y' = 665x^{18}$   
 $y = 37x^{20}$   $y' = 740x^{19}$   
 $y = 39x^{21}$   $y' = 819x^{20}$   
 $y = 41x^{22}$   $y' = 902x^{21}$   
 $y = 43x^{23}$   $y' = 989x^{22}$   
 $y = 45x^{24}$   $y' = 1080x^{23}$   
 $y = 47x^{25}$   $y' = 1175x^{24}$   
 $y = 49x^{26}$   $y' = 1274x^{25}$   
 $y = 51x^{27}$   $y' = 1377x^{26}$   
 $y = 53x^{28}$   $y' = 1484x^{27}$   
 $y = 55x^{29}$   $y' = 1595x^{28}$   
 $y = 57x^{30}$   $y' = 1710x^{29}$   
 $y = 59x^{31}$   $y' = 1829x^{30}$   
 $y = 61x^{32}$   $y' = 1952x^{31}$   
 $y = 63x^{33}$   $y' = 2079x^{32}$   
 $y = 65x^{34}$   $y' = 2210x^{33}$   
 $y = 67x^{35}$   $y' = 2345x^{34}$   
 $y = 69x^{36}$   $y' = 2484x^{35}$   
 $y = 71x^{37}$   $y' = 2627x^{36}$   
 $y = 73x^{38}$   $y' = 2774x^{37}$   
 $y = 75x^{39}$   $y' = 2925x^{38}$   
 $y = 77x^{40}$   $y' = 3080x^{39}$   
 $y = 79x^{41}$   $y' = 3239x^{40}$   
 $y = 81x^{42}$   $y' = 3402x^{41}$   
 $y = 83x^{43}$   $y' = 3569x^{42}$   
 $y = 85x^{44}$   $y' = 3740x^{43}$   
 $y = 87x^{45}$   $y' = 3915x^{44}$   
 $y = 89x^{46}$   $y' = 4094x^{45}$   
 $y = 91x^{47}$   $y' = 4277x^{46}$   
 $y = 93x^{48}$   $y' = 4464x^{47}$   
 $y = 95x^{49}$   $y' = 4655x^{48}$   
 $y = 97x^{50}$   $y' = 4850x^{49}$   
 $y = 99x^{51}$   $y' = 5049x^{50}$   
 $y = 101x^{52}$   $y' = 5252x^{51}$   
 $y = 103x^{53}$   $y' = 5459x^{52}$   
 $y = 105x^{54}$   $y' = 5670x^{53}$   
 $y = 107x^{55}$   $y' = 5885x^{54}$   
 $y = 109x^{56}$   $y' = 6104x^{55}$   
 $y = 111x^{57}$   $y' = 6327x^{56}$   
 $y = 113x^{58}$   $y' = 6554x^{57}$   
 $y = 115x^{59}$   $y' = 6785x^{58}$   
 $y = 117x^{60}$   $y' = 7020x^{59}$   
 $y = 119x^{61}$   $y' = 7259x^{60}$   
 $y = 121x^{62}$   $y' = 7502x^{61}$   
 $y = 123x^{63}$   $y' = 7749x^{62}$   
 $y = 125x^{64}$   $y' = 8000x^{63}$   
 $y = 127x^{65}$   $y' = 8255x^{64}$   
 $y = 129x^{66}$   $y' = 8514x^{65}$   
 $y = 131x^{67}$   $y' = 8777x^{66}$   
 $y = 133x^{68}$   $y' = 9044x^{67}$   
 $y = 135x^{69}$   $y' = 9315x^{68}$   
 $y = 137x^{70}$   $y' = 9590x^{69}$   
 $y = 139x^{71}$   $y' = 9869x^{70}$   
 $y = 141x^{72}$   $y' = 10152x^{71}$   
 $y = 143x^{73}$   $y' = 10439x^{72}$   
 $y = 145x^{74}$   $y' = 10730x^{73}$   
 $y = 147x^{75}$   $y' = 11025x^{74}$   
 $y = 149x^{76}$   $y' = 11324x^{75}$   
 $y = 151x^{77}$   $y' = 11627x^{76}$   
 $y = 153x^{78}$   $y' = 11934x^{77}$   
 $y = 155x^{79}$   $y' = 12245x^{78}$   
 $y = 157x^{80}$   $y' = 12560x^{79}$   
 $y = 159x^{81}$   $y' = 12879x^{80}$   
 $y = 161x^{82}$   $y' = 13202x^{81}$   
 $y = 163x^{83}$   $y' = 13529x^{82}$   
 $y = 165x^{84}$   $y' = 13860x^{83}$   
 $y = 167x^{85}$   $y' = 14195x^{84}$   
 $y = 169x^{86}$   $y' = 14534x^{85}$   
 $y = 171x^{87}$   $y' = 14877x^{86}$   
 $y = 173x^{88}$   $y' = 15224x^{87}$   
 $y = 175x^{89}$   $y' = 15575x^{88}$   
 $y = 177x^{90}$   $y' = 15930x^{89}$   
 $y = 179x^{91}$   $y' = 16289x^{90}$   
 $y = 181x^{92}$   $y' = 16652x^{91}$   
 $y = 183x^{93}$   $y' = 17019x^{92}$   
 $y = 185x^{94}$   $y' = 17390x^{93}$   
 $y = 187x^{95}$   $y' = 17765x^{94}$   
 $y = 189x^{96}$   $y' = 18144x^{95}$   
 $y = 191x^{97}$   $y' = 18527x^{96}$   
 $y = 193x^{98}$   $y' = 18914x^{97}$   
 $y = 195x^{99}$   $y' = 19305x^{98}$   
 $y = 197x^{100}$   $y' = 19700x^{99}$