I Have … Who Has … Cards – Derivatives

Prepare a set of cards for class. Each card will have an answer and a question written on it.

As students come to class, hand each of them a card.

Keep one card for yourself (I keep the first card on the list) and hand out the remaining cards to students who wish them. Then, beginning with your card, read the "I have ..." part and then the "Who has ... " part. The student who has the answer to your question will then read his or her card. The student with the answer to that question reads his card and so on until you have gone through the entire set of cards.

This is a good technique for reviewing for a test. It gets every student involved.

Below is a set of I Have ... Who Has ... cards to use with a review of derivatives.

I HAVE …	WHO HAS …
1. Pumpkin Pi	1. $\frac{d}{dx}\left(8x^3\right)$
2. $24x^2$	2. 100^{th} derivative of $y = 5x^{10}$
3. 0	3. the Product Rule
4. $\frac{d}{dx}(u \bullet v) = uv' + vu'$	4. $\frac{d}{dx}\left(f(g(x))\right)$
5. $f'\left(g(x)\right) \bullet g'(x)$	5. $\frac{d}{dx}\left(\tan 2x\right)$
6. $2\sec^2(2x)$	6. $\frac{d}{dx}(u+v)$
7. u' + v'	7. $\frac{d}{dx}\left(\cos 2x\right)$
8. -2 sin(2x)	8. the derivative of $y = 12x$
9. 12	9. the derivative of $y = x^8$
10. $8x^7$	10. $\frac{dv}{dt} \bullet \frac{dt}{dw} =$
11. $\frac{dv}{dw}$	11. $\frac{d}{dx}\left(\sec x\right)$
12. sec(x) tan(x)	12. the derivative of velocity with respect to time
13. acceleration	13. $\frac{d}{dv}\left(8v^2 - 16\right)$
14. 16v	14. $\frac{d}{dx}\left(f(x) - g(x)\right)$
15. f '(x) – g'(x)	15. the derivative of $12x - 5x^3$

I HAVE …	WHO HAS …
16. $12 - 15x^2$	16. $\frac{d}{dx}\left(\frac{u}{v}\right)$
17. $\frac{v \bullet u' - u \bullet v'}{v^2}$	17. $\frac{d}{dx}(\sin u)$
18. $(\cos u)\frac{du}{dx}$	18. $\frac{d}{dx}\left(x^{-2}\right)$
19. $-2x^{-3}$ or $\frac{-2}{x^3}$	19. $\frac{d}{dx}(\csc u) =$
20. $-\csc(u) \bullet \cot(u)\frac{du}{dx}$	20. the derivative of displacement with respect to time
21. velocity	21. $\frac{d}{dx}(x \tan x)$
22. $x \sec^2 x + \tan x$	22. $\frac{d}{dx}(\cot u) =$
23. $-\csc^2(u)\frac{du}{dx}$	23. $\frac{d}{dx}\left(\frac{x}{8}\right) =$
24. 1/8	24. $\frac{d}{dx}\left(\frac{1}{x}\right) =$
25. $-\frac{1}{x^2}$	25. $\frac{d}{dx}(2\cos x)$
26. $-2\sin x$	26. $\frac{d}{dx}(f(x) \bullet g(x))$
27. $f(x) \bullet g'(x) + g(x) \bullet f'(x)$	27. the derivative of x^{2012}
28. $2012\, x^{2011}$	28. instantaneous rate of change of $y = x^3$ at $x = 1$
29. 3	29. average rate of change of $y = x^3$ over the interval [1, 2]
30. 7	30. circumference of a jack-o-lantern divided by its diameter