Speed Dating Cards

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| 1.a) $y=f\left(x\right)-5$b) $y=f(x-5)$ | 2.a) $y=f\left(x+7\right)$b) $y=f\left(x\right)+7$ | 3.a) $y=f\left(x+\frac{1}{2}\right)$b) $y=f\left(x\right)+\frac{1}{2}$ |
| 4.a) $y=-f\left(x\right)$b) $y=f(-x)$ | 5.a) $y=-f\left(x\right)+5$b) $y=f\left(x\right)-5$ | 6.a) $y=f\left(x-4\right)+\frac{1}{4}$b) $y=f\left(x+4\right)-\frac{1}{4}$ |
| 7.a) $y=f\left(x+2\right)-2$b) $y=-f\left(x+2\right)-2$ | 8.a) $y=-f\left(x+5\right)+1$b) $y=f\left(x+5\right)-1$ | 9.a) $y=f\left(x\right)-4$b) $y=-f\left(x\right)-4$ |
| 10.a) $y=f\left(x\right)+3$b) $y=-f(x+3)$ | 11.a) $y=f\left(x+1\right)$b) $y=-f\left(x\right)+1$ | 12.a) $y=f\left(x-\frac{1}{3}\right)$b) $y=-f(x-\frac{1}{3})$ |
| 13.a) $y=f\left(x+2\right)$b) $y=-f(x+2)$ | 14.a) $y=-f\left(x+5\right)$b) $y=-f\left(x+5\right)+5$ | 15.a) $y=f\left(x-7\right)$b) $y=f\left(x+7\right)+1$ |
| 16.a) $y=f\left(x+1\right)-1$b) $y=-f\left(x+1\right)-1$ | 17.a) $y=-f\left(x+3\right)+2$b) $y=f\left(x+3\right)-2$ | 18.a) $y=f\left(x\right)-1$b) $y=-f\left(x\right)-4$ |
| 19.a) $y=f\left(x\right)+9$b) $y=-f(x+9)$ | 20.a) $y=f\left(x+11\right)$b) $y=-f\left(x\right)+11$ | 21.a) $y=f\left(x-\frac{1}{5}\right)$b) $y=-f(x-\frac{1}{5})$ |
| 22.a) $y=f\left(x+13\right)$b) $y=-f\left(x+13\right)-2$ | 23.a) $y=-f\left(x+9\right)+3$b) $y=f\left(x+9\right)-3$ | 24.a) $y=f\left(x+3\right)-4$b) $y=-f\left(x+3\right)-4$ |
| 25.a) $y=f\left(x-10\right)$b) $y=f\left(x\right)-10$ | 26.a) $y=-f\left(x+8\right)$b) $y=-f\left(x+8\right)-8$ | 27.a) $y=f\left(x-12\right)$b) $y=f(x+12)$ |
| 28.a) $y=f\left(x+10\right)$b) $y=-f(x+10)$ | 29.a) $y=f\left(x-10\right)$b) $y=-f\left(x\right)-10$ | 30.a) $y=f\left(x-0.01\right)$b) $y=-f(x-0.01)$ |
| 31.a) $y=f\left(x-0.35\right)$b) $y=-f\left(x\right)-0.35$ | 32.a) $y=-f\left(x+\frac{2}{7}\right)$b) $y=-f\left(x+\frac{2}{7}\right)-2$ | 33.a) $y=f\left(x-0.25\right)$b) $y=f\left(x+0.25\right)+3$ |
| 34.a) $y=f\left(x+π\right)$b) $y=-f\left(x+π\right)-2$ | 35.a) $y=-f\left(x+\frac{5}{2}\right)$b) $y=f\left(x+\frac{5}{2}\right)-5$ | 36.a) $y=f\left(x+\frac{π}{2}\right)-2$b) $y=-f\left(x+\frac{π}{2}\right)-2$ |

<http://cheesemonkeysf.blogspot.com/2014/08/precalculus-transformations-of.html>

Keep your focus on whether you are dealing with transformations of inputs or outputs.

We started simply, using only a single function du jour. On Friday, that was the square root of x. We also restricted our investigation to horizontal and vertical shifts as well as reflections across the x- and y-axis. We were considering the impact on the graphs of basic parent functions as we operated on either the input or the output of the function. We did not multiply by any value other than –1 to start. The Day 1 problem cards are here.

On Friday, each of my 36 students started out with his or her own problem card that contained two related transformations — a shift and a reflection. We organized the speed dating structure, moved our backpacks along the two empty walls, and established our rules of movement (the students along the window side of each row travel, while the hallway-side students stay where they are). If you run into problems, ask the expert in the room on that problem. He or she is sitting directly across from you.

36 precalc students in a state of flow

Trade, analyze, investigate, sketch, discuss. For forty minutes, my Precalculus students lost themselves in analyzing, investigating, sketching, and discussing functional operations on inputs and outputs. Every two minutes, my iPhone timer would go off and I would call out, "Shift!" And all 36 students would trade back their problem cards, while half of them stood up and moved one seat to their right. Then I would reset the timer and they would lose their ego-selves in each new immersion.