1. We have that in general, $b^{\log_b a} = a$. Thus, $10^{\log_{10} 9} = 9$, and our equation becomes $9 = 8x + 5$, or $x = \boxed{\textbf{(B)}\ \frac{1}{2}}$.

2. Taking 7 to the power of both sides, we have $\log_3(\log_2 x)) = 1$. Taking 3 to the power of both sides, we have $\log_2 x = 3$. Finally, we have $x = 2^3$. Thus, $x^{-1/2} = \frac{1}{2\sqrt{2}}$, which is $\boxed{\textbf{(E)}\ \text{none of these}}$.

3. We have $log_2 a + log_2 b = log_2 ab \geq 6$, so $ab \geq 2^6 = 64$. We have $(a+b)^2 \geq 4ab$, so $(a+b)^2 \geq 4ab \geq 256$. Thus, $a + b \geq \boxed{\textbf{(D)}\ 16}$.

4. Taking the log base 10 of both sides, we have $\log_{10} x \cdot \log_{10} x = \log_{10} 10 = 1$, or $(\log_{10} x)^2 = 1$. We have $\log_{10} x = \pm 1$, or $x = 10, \frac{1}{10}$. The product of these solutions is $\boxed{\textbf{(A)}\ 1}$.

5. We have that $\frac{\log p}{\log 9} = \frac{\log q}{\log 12} = \frac{\log(p+q)}{\log 16}$, or $\frac{\log p}{2\log 3} = \frac{\log q}{\log 3 + \log 4} = \frac{\log(p+q)}{2\log 4}$. Adding the first and last fraction's numerators and denominators together, we have $\frac{\log p + \log(p+q)}{2\log 3 + 2\log 4} = \frac{\log q}{\log 3 + \log 4}$. Thus, $\log p + \log(p+q) = 2\log q$, or $\log p(p+q) = \log q^2$. Thus, $p^2 + pq = q^2$, and dividing by p^2, we have $1 + \frac{q}{p} = \frac{q^2}{p^2}$, or letting $u = \frac{q}{p}$, $1 + u = u^2$. Using the quadratic formula, we find $u = \frac{q}{p} = \boxed{\textbf{(D)}\ \frac{1}{2}(1+\sqrt{5})}$.

6. Any point (x, y) on the original graph, when rotated 90° counterclockwise, will move to the point $(-y, x)$. This new graph is a function f such that $f(-y) = x$. But $x = 10^y$, so this is $f(-y) = 10^y$. Letting $-y = u$, we have $f(u) = 10^{-u}$, so our answer is $\boxed{\textbf{(D)}\ y = 10^{-x}}$.

7. We have that $\log_5(k+4) - \log_5 k = .5$, or $\log_5 \frac{k+4}{k} = .5$. Taking 5 to the power of both sides, we have $\frac{k+4}{k} = \sqrt{5}$, or $k + 4 = \sqrt{5}k$, which simplifies to $k = 1 + \sqrt{5}$. Thus, our answer is $1 + 5 = \boxed{\textbf{(A)}\ 6}$.

8. Using the change of base log property, our equation becomes $\frac{\log x \cdot \log x}{\log a \cdot \log b} = \frac{\log b}{\log a}$. Since $a, b \neq 1$, we can multiply both sides by $\log a \cdot \log b$ to get $(\log x)^2 = (\log b)^2$. Thus, we have $\log x = \pm \log b$, or $x = b, \frac{1}{b}$, giving $\boxed{\textbf{(C)}\ 2}$ distinct values.

9. Notice that $\log_8 n = \frac{\log_2 n}{3}$ is rational only iff $\log_2 n$ is rational, which is only true when $n = 2^a$. The powers of 2 from 1 to 1997 inclusive are $1, 2, \ldots, 1024$, and taking each mod 8, we have $0, \frac{1}{3}, \frac{2}{3}, \ldots, \frac{10}{3}$. Thus, the answer is $\frac{1+2+\ldots+10}{3} = \frac{55}{3}$.

10. This equation is equivalent to $\frac{\log N}{\log M} = \frac{\log M}{\log N}$, or $(\log M)^2 = (\log N)^2$. Since M, N are distinct, we must have $\log M = -\log N$, so $\log M + \log N = 0$, or $MN = \boxed{\textbf{(B)}\ 1}$.